

Winter 2019

# segment

News and information for  
customers and business partners

**steag**  
POWER MINERALS

## Good Morning, Vietnam!

STEAG Power Minerals on  
the way into the Southeast  
Asian market

### Prospects for fly ash

Additional capacity for STEAG Energo Mineral

### Generation Z on the up

Two new trainees introduce themselves

### „Looks like a SENSational future“

The new family member, STEAG Solar Energy Solutions



The province of Ninh Binh is one of the smallest in Vietnam and is located south of Hanoi, right between the delta of the Red River and the river Ma. The surrounding area with its numerous sugar loaf mountains, grottos and small river courses stretching inbetween are simply fantastic and almost unreal. Apart from the beautiful landscape, however, there is also the headquarters of Hoang Son, the new STEAG partner for Southeast Asia. (Find out more from page 6 onwards)

(Source: vietnam.de)

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*Dear readers,*

In the light of the German Climate Protection Act, the future of power plant by-products is, of course, currently one of the major issues for STEAG Power Minerals. After all, this is not just about the basis of our own business, but also about vital raw materials for our customers in a variety of industries. In this issue of SEGMENT, we show you in a series of articles what we at STEAG Power Minerals have in mind to enable us to supply you, our customers, safely and reliably with the required quantities of high-quality by-products from hard coal fired power plants in the near future and beyond. For example, we have put our fly ash drying plant in Lünen back into operation (p. 16) and secured additional fly ash capacities from the new units at the Opole power plant in Poland by means of further purchase agreements, which offer us – and you! – interesting prospects (p. 14). Sustainability on the transport routes is always an important point, and here we have found an elegant and efficient solution not only for fly ash from Opole, but also for 140,000 metric tons of high-quality coal slag from the former Ensdorf power station on the Saar – read more on page 18. And what awaits you on page 6 is particularly exciting: There, we present our brand new cooperation with our partner Hoang Son, with whom STEAG Power Minerals will now set off for the Southeast Asian market. The first target country for market entry is Vietnam, where energy from hard coal will be the central pillar of the country's economic development strategy for the coming decades – an ideal environment for contributing our many years of know-how in the marketing of power plant by-products.

But you don't actually have to move so far away from our home locations to come across some very exciting things – such as the "Learning from life" project at the Waldorf School in Dinslaken, where students from the 9th grade are doing amazing work in Bulgaria on their own. We are sure you will be as impressed as we are after reading the report (starting on p. 30).

Finally, we would like to wish you not only an informative read, but above all a peaceful and positive end to a year that has brought great challenges for all of us. We look forward to tackling these challenges together with you in the coming year.

Best regards,

Andreas Hugot

Stephan Altendeitering

The Directors of STEAG Power Minerals GmbH

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## INTERNATIONAL

- 6** **Good Morning, Vietnam!**  
STEAG Power Minerals on the way into the Southeast Asian market
- 12** **Further on with concrete**  
Invitation to the 2020 VDB Conference in Strasbourg

## STRATEGIC

- 14** **Prospects for fly ash**  
STEAG Energo Mineral secures additional capacity from the Opole power plant
- 16** **Fresh from the dryer**  
Recommissioning of the fly ash drying plant in Lünen for continuous security of supply

## PRACTICAL

- 18** **140,000 metric tons of coal slag transported**  
STEAG Power Minerals moves mountains – in sustainable ways
- 20** **New regulation directive is available**  
Environmental impact assessment for fly ash and bottom ash

## CONNECTED

- 22** **Gunter Reiner: Retirement “with a broad grin”**  
The former Powerment Managing Director interviewed by SEGMENT
- 25** **Successful on the market for more than 50 years**  
Stefan Krane of the Emsland Transportbeton-Group in an interview with SEGMENT



## COMMITTED

- 28** **Generation Z on the up**  
Two new trainees introduce themselves
- 30** **Learning from life**  
Impressive project concept by the Free Waldorf School in Dinslaken

## IN BRIEF

- 32** **Troisdorf landfill**  
Good ideas for contemporary sealing and optimized geometry
- 33** **MinCom® DVM 01 K packing material**  
Successful launch of the new formula

## STEAG WORLD

- 34** **Efficient at full steam**  
STEAG develops a model strategy for the Ruhr Oel refinery in Gelsenkirchen
- 36** **„Looks like a SENSational future“**  
The new family member, STEAG Solar Energy Solutions

## INTERACTIVE

- 38** **Betonkopp**
- 39** **Competition**

# Good Morning, Vietnam!

In the course of pursuing business development, STEAG Power Minerals has for some time been exploring opportunities to exploit the potential of power plant by-products in activities on new markets. Southeast Asia has come into focus as a region with promising potential for the transfer of the expertise built up by the company in four decades. With the new partner Hoang Son, STEAG Power Minerals is now taking the first step towards market launch in the current focal nation of Vietnam.

Vietnam has massive economic targets: Following rapid development into an emerging nation, the Southeast Asian state wants to achieve the status of an industrialized country in the near future. The country's energy and construction industries are experiencing correspondingly strong growth, and digitization is also being strongly promoted. In order to cover the energy demand associated with this development, the government decided in 2016 to triple coal-based power generation to 47.6 GW in 2020 (then approx. 55% of the expected energy mix).



### Good quality power plant by-products

This capacity expansion in coal-based power generation is expected to double the current annual production of 14 million metric tons of hard coal fly ash over the next few years. As domestic coal reserves are limited, imported hard coal will increasingly be used in existing and new coastal power plants. Combined with the use of international, optimized power plant technology, this will create good conditions for high-quality power plant by-products. In addition to fly ash, the planned optimization of flue gas



„Especially around the booming region of Ho Chi Minh City in South Vietnam with its proximity to the major local players, we see great potential to use our strengths profitably and to implement our business strategy successfully.“

Andreas Hugot, Geschäftsführer STEAG Power Minerals

desulfurization systems for more efficient use of hard coal will also benefit the production of FGD gypsum. In addition to the domestic and supra-regional building materials industry, the natural environment can also benefit from this development: By 2017, Vietnam was already the fourth largest cement producer in the world after China, India and the USA with a production volume of 78 million metric tons – and the trend is rising. Increased use of fly ash here not least opens up the opportunity to positively change the ecological footprint of cement production: The clinker required for the production of cement is burnt at very high temperatures, with correspondingly high CO<sub>2</sub> emissions. If fly ash, a by-product of the power plant, is used instead, the CO<sub>2</sub> balance will improve – in some cases considerably

#### STEAG Power Minerals Asia Pte Ltd – a new STEAG player in the Southeast Asian region

STEAG Power Minerals founded the subsidiary STEAG Power Minerals Asia Pte. Ltd. in the summer of 2019 to implement its strategic orientation in the focal region of Southeast Asia. The company is located in Singapore, which is the hub for business activities in Southeast Asia. The task of the local team will be to further expand the existing networks, accelerate the transfer of STEAG's expertise to the Southeast Asian market and develop new activities together with local partners.

### STEAG Power Minerals and Hoang Son: a strategic partnership for common goals

In order to gain a foothold in this new market as quickly and efficiently as possible, STEAG Power Minerals is now relying on cooperation with an already established local partner: Hoang Son Fly Ash and Cement Joint Stock Company, which focused its operating business on the marketing of power plant by-products in 2015 (see info-box). The first contact talks in spring 2018 already showed the great potential of a cooperation for both sides: STEAG Power Minerals' many years of experience in the field of power plant by-products and Hoang Son's local market access are an ideal complement to each other. After a few months in which ideas and suggestions for future market development were exchanged, it was finally clear that the cooperation would take the form of a shareholding by STEAG Power Minerals in Hoang Son. The relevant documents were signed in July. ▶▶▶

## Hoang Son Fly Ash and Cement Joint Stock Company

Hoang Son was founded in 2003 by Hoang Dai Huy, who, as managing partner, quickly established the company in the country's growing construction materials industry. The company initially made a name for itself as a cement supplier to the concrete industry, especially in North Vietnam. By establishing its own logistics infrastructure with an efficient fleet of nine inland waterway vessels and a fleet of 40 modern trucks, Hoang Son quickly developed into a provider of integrated logistics solutions. In 2015, Hoang Son recognized the potential of fly ash and the possibilities for its sustainable use in the construction materials industry, and was the first Vietnamese company to align its operating strategy accordingly. Since then, the company has focused on the removal and marketing of power plant by-products from coal-based power plants. The company takes on the challenges of the industry such as securing sources of supply and sales channels, and handling fly ash of inferior quality, and develops tailor-made solutions. For example, Hoang Son is currently investing in a fly ash processing plant and a concrete block factory at the Long Hau site near Ho Chi Minh City; operations are scheduled to start in 2020.

## Profile Vietnam

Vietnam is a long, drawn-out country with an area of approximately 331,690 km<sup>2</sup> in eastern Southeast Asia, with a 3,500 km coastline to the Gulf of Tonkin, the South China Sea and the Pacific Ocean; neighbors on the land side are the People's Republic of China, Cambodia and Laos. Beside the capital Hanoi, Ho Chi Minh city (formerly Saigon) Haiphong and C n Th Đà N ng are important metropolises. Almost 35% of the total population of about 95 million inhabitants live in the urban regions of the cities.



After a phase of partition into North and South Vietnam starting in 1954, the country has been reunited as the Socialist Republic of Vietnam since 1976. The "Doi Moi" reforms to liberalize the economy in the 1980s and the opening to globalization triggered rapid economic growth and the country became an attractive investment location for international companies. The World Bank now classifies the Southeast Asian state as a "lower middle-income country". In the Global Competitiveness Index, which measures a country's competitiveness, Vietnam ranked 55th out of 137 countries in 2018. A new strategic partnership with Germany has existed since 2011, focusing on vocational training, environmental protection, resource conservation and energy.

(Sources: Federal German Ministry for Economic Cooperation and Development)

### Growing together – to grow together

Following STEAG Power Minerals' acquisition of the shares in Hoang Son, the next weeks and months will see an intensification of the cooperation and a fusion of the strengths of both partners. "Hoang Son is established in the Vietnamese region in the area of procurement and sales, which will open many doors for us and save us detours. I can see very interesting prospects in the integrated logistics solutions with which Hoang Son covers the entire value chain from the power plant operator to the final customer. These enable us to jointly offer a wide range of services from a single source and thus achieve a unique position in the local market. Here we can also contribute our experience in process design and execution," says Nils Jansen, Head of International Sales at STEAG Power Minerals.

„Together with the new shareholder STEAG Power Minerals, Hoang Son will further optimize its activities in the areas of logistics, technology, sales and processes to better meet the needs of customers in the power plant and construction industries.“

Hoang Dai Huy, Managing Director of Hoang Son

In addition, STEAG Power Minerals can not only provide its Vietnamese partner with extensive knowledge from the international environment, but can also make use of many years of know-how from application technology and power plant management by embedding it in the STEAG Group. "Together with the new shareholder STEAG Power Minerals, Hoang Son will further optimize its activities in the areas of logistics, technology, sales and processes and thus better meet the requirements of customers in the power plant and construction industries," emphasizes Hoang Dai Huy, Managing Director of Hoang Son. And finally, Andreas Hugot, Managing Director of STEAG Power Minerals, hopes that the intercultural exchange will also lead to an increase in in-house expertise: "I am always impressed by how Hoang Son has managed to achieve such a market position within such a short time and to guarantee the security of supply to its customers in the Vietnamese market. Ultimately, this is based on corporate values that are anchored in culture and mentality. For this reason, too, the cooperation is stimulating for me, and I am sure that by combining the strengths of our companies we will achieve a successful launch and a permanent presence in the Southeast Asian region." ■

## 3 questions for ...

1

### How important are power plant by-products in Vietnam to date? What do you expect for the future?

The importance of power plant by-products in Vietnam has grown strongly in recent years and further growth is expected. The fly ash market will grow significantly as coal-fired power plant capacities increase from the current 20 GW to 47 GW in 2025. At the same time, demand in the construction industry is rising. Vietnam is already the fourth largest cement producer in the world. The expected doubling of fly ash quantities in Vietnam will present a major challenge, which will also open up enormous potential. At the same time, the sale of power plant by-products to the construction industry can only be ensured with good quality products. Conversion to imported coal, which results in higher quality of fly ash compared to the use of domestic coal resources, are already discernible in the power industry, and so the importance of fly ash as an additive will increase.

2

### What makes your company so special?

Hoang Son was founded in 2003 and initially operated as a service provider in the cement industry. In 2015, the strategic thrust of the company was fundamentally changed and the focus of the company was placed on the sale of power plant by-products. Despite the organic growth of Hoang Son in the years since its foundation, the company remained in family hands until the investment by STEAG Power Minerals. Hoang Son represents long-term values: Building trust, concluding long-term cooperation and building sustainable value – this is also reflected in our company logo.

3

### What do you expect from the cooperation with STEAG Power Minerals? What could be a common benefit?

With the strategic change of the focused business activity within a market known to Hoang Son, we are already aware that Hoang Son has great potential in the areas of internationalization of the business model and professionalization of business processes, which can be exploited by the addition of a strategic partner. Against this background, I regard the cooperation with STEAG Power Minerals as the best way forward. STEAG Power Minerals is a partner who has built up knowledge and expertise in the market for power plant by-products in Germany and Europe over many decades and who will also be able to enter the market in Southeast Asia through the existing international network. By positioning the STEAG brand in Vietnam, both Hoang Son and STEAG Power Minerals will benefit in both the short and the long term. The cooperation and the establishment of a joint venture will give Hoang Son a new breath of vitality.



# Pushing the boundaries with concrete

VDB goes Europe: For the first time, the Association of German Concrete Engineers (Verband Deutscher Betoningenieure e.V. – VDB) has chosen a venue outside Germany for its next Technical Conference on May 19 and 20, 2020 in Strasbourg. At the general meeting of members following the conference, Dr. Michael Lichtmann from STEAG will once again be present as a member of the governing committee. He was re-elected unanimously by the members at this year's meeting for a further two years.

To create a platform for a personal exchange of experience on concrete and related building materials as well as for networking its members across (regional group) borders – with this in mind, the VDB has been organizing its conference for and with experts from the concrete industry every two years since 1976. Which new impetus is coming from research, where do practitioners have interesting solutions for current challenges, and what prospects are offered by concrete and related building materials? These are the big questions that will be discussed from a variety of perspectives at the VDB conference. Increasingly, the conference also provides an opportunity to look beyond one's own horizons: At the last two events in Friedrichshafen (May 2016) and Warnemünde (May 2018), experts from the Netherlands, Switzerland, Austria, Luxembourg and Denmark already brought an international aspect to the event. With the venue of Strasbourg – in the direct vicinity of the places where every month (except in August) the members of the European Parliament debate for one week and shape policies for 500 million people – the VDB is now sending out a further signal in the direction of European networking.

## All-round package for participants

In the form of the CCI Campus Strasbourg, a state-of-the-art conference center is available for the “concrete expert talk with European flair”, where, for example, up to 300 audience members can follow the presentations of the specialist speakers from research and practical application at the Amphithéâtre Simone Weil. The persons accompanying the conference participants can look forward to an attractive tourist program in the historic old town with its impressive cathedral. While the subsequent general meeting is reserved for the registered members of the VDB, the technical conference is open to all interested parties – and offers in particular to all those who are considering membership in the VDB an ideal opportunity for a noncommittal trial.

Since hotel rooms in Strasbourg are booked out rapidly during the meeting weeks of the European Parliament, the VDB has reserved room contingents in various hotels, which can be reviewed and booked up to March 15.

Detailed information can be found on the VDB website [www.betoningenieure.de](http://www.betoningenieure.de). ■



„There is surely hardly any better opportunity, especially for young concrete engineers, to expand their networks – nationally and internationally – and engage in technical discussions with colleagues on various aspects revolving around concrete. See you in Strasbourg in May!“

Dr. Michael Lichtmann, Head of Construction Consultancy at STEAG Power Minerals GmbH and member of the managing board of the Association of German Concrete Engineers (VDB)

## Who works for Europe where?

### Brussels

Workplace for various committees reporting to Parliament

Seat of the Council of the European Union, in which the ministers from all EU countries regularly discuss laws and regulations and coordinate areas of policy

Together with the European Parliament, the Council of the European Union is the main decision-making body of the EU

### Luxembourg

Location of the first plenary hall of the EU

Now, it is the home of a majority of the administrative apparatus of the Parliament, including the Secretariat of the Parliament and the Directorate-General for Translation and Interpreting

### Strasbourg

Official seat of the European Parliament with 750 members from all the member states of the European Union.

The European Parliament is the legislature of the EU and its members are directly elected by EU citizens every five years.

The VDB was founded in 1974 and is organized in 14 regional groups. Its more than 1,800 members work as concrete engineers at ready-mixed concrete companies, cement plants, precast plants, construction companies or universities and contribute their broad know-how in concrete acquired from practice and research to numerous working groups. Due to the VDB's participation in standardization committees, the practical experience of the VDB members is also incorporated in the relevant standards and specifications. With a view to the further development of European standardization, the VDB also engages in cooperation across national borders, for example with the Dutch STUTECH (Study Association for Concrete Technology) and the Association of Swiss Concrete Technologists (VSB).

The Technical Conference, which takes place every two years, offers a platform for sharing the latest developments both with an extended circle of experts and with a broader public.

STEAG Power Minerals GmbH is a corporate member of the association; in addition, numerous employees of the company are personal members of the VDB.

Dr. Michael Lichtmann, head of construction consulting at STEAG Power Minerals, has been a member of the managing board of the VDB on a voluntary basis for 10 years. In addition to his role as board secretary, he coordinates the contacts with the European partner associations. He also heads the VDB working group “Standardization” and has represented the VDB on the working committees “AA Betontechnik des Normenausschuss Bauwesen im Deutschen Institut für Normung e.V. (DIN)” and “TA Betontechnik im Deutschen Ausschuss für Stahlbeton (DAfStb)” since 2011.

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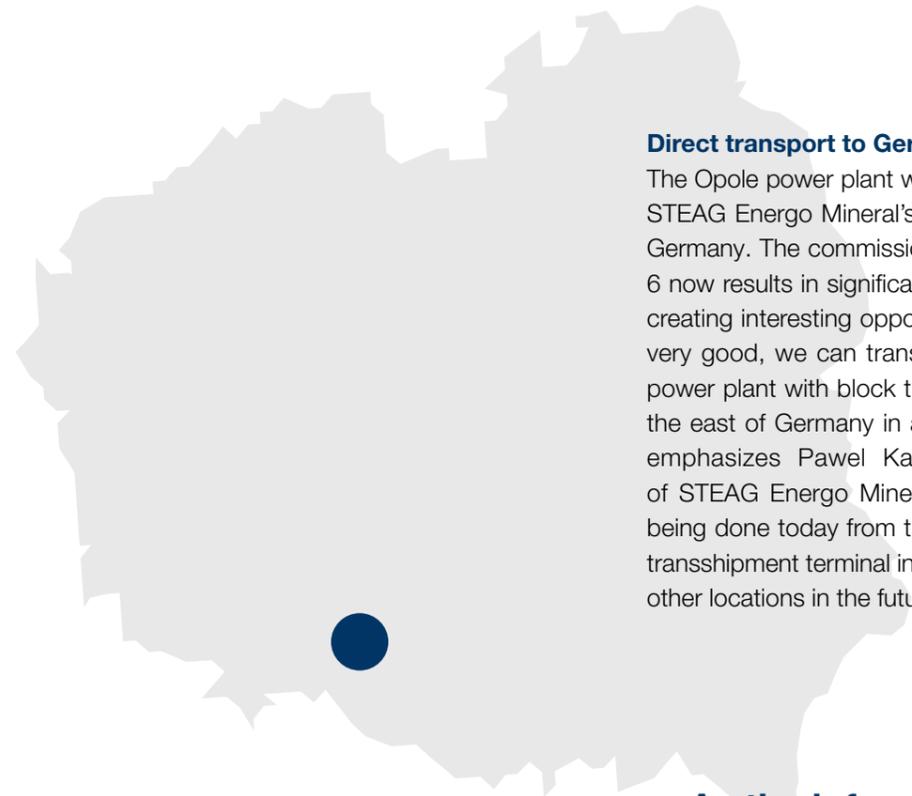
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# Prospects for fly ash

In September, two new units with a capacity of 900 MW each were commissioned at the Opole hard coal fired power plant in Poland. The fly ash from these units will help secure supplies to the German market in the future. STEAG Energo Mineral Deutschland took the opportunity to present the structure and plans of the company at site to market partners from Germany.

Opole in the southwest of Poland is regarded as the historical capital of Upper Silesia. With a population of 120,000, its size roughly corresponds to that of Saarbrücken or Heidelberg, and not least among football fans the name should have a certain resonance – after all, Miroslav Klose is one of the city’s famous offspring. For STEAG Power Minerals, the city on the upper reaches of the Oder is of strategic importance: Opole is the headquarters of STEAG Energo Mineral Sp. z o.o., the joint subsidiary of STEAG Power Minerals and the Duda Group (JD Holding) and itself the parent company of STEAG Energo Mineral Deutschland GmbH based in Berlin. STEAG Energo Mineral Deutschland

was launched in 2017 to match the supplies to customers in the former East German states with power plant by-products from German sources and sources in Poland and the Czech Republic. With the Duda Group as a co-shareholder, STEAG Energo Mineral Deutschland has a strong partner at its side who, on the one hand, guarantees secure access to the Polish power plant sites and, on the other hand, provides comprehensive rail and road logistics. As the central organizational unit of the companies, the dispatching department located in Opole links the flows of power plant by-products in the three-country network system of Poland, the Czech Republic and Germany.



## Direct transport to Germany with block trains

The Opole power plant with its four units is already part of STEAG Energo Mineral’s supplier portfolio in Poland and Germany. The commissioning of the two new units 5 and 6 now results in significant additional quantities of fly ash, creating interesting opportunities: “As the infrastructure is very good, we can transport the fly ash from the Opole power plant with block trains to the new federal states in the east of Germany in an environmentally friendly way,” emphasizes Pawel Kadlubowski, Managing Director of STEAG Energo Mineral Deutschland. This is already being done today from the older power plant units to the transshipment terminal in Coswig and is to be extended to other locations in the future.

„As the infrastructure is very good, we can transport the fly ash from the Opole power plant with block trains to the new federal states in the east of Germany in an environmentally friendly way.“

Pawel Kadlubowski, Managing Director of STEAG Energo Mineral



## STEAG Energo Mineral Deutschland GmbH

- » Head Office: Berlin
- » Shareholders: 100% STEAG Energo Mineral Sp. z o.o.
- » Marketing of fly ash and other power plant by-products in the east of Germany
- » Modern transshipment terminals with a storage capacity of approx. 44,000 m³

## STEAG Energo Mineral Sp. z o.o.

- » Head Office: Opole, Poland
- » Shareholders: 50% STEAG Power Minerals GmbH / 50% JD Holding
- » Recycling of power plant by-products (EN 450 fly ash and fluidized bed ash) from Poland
- » Quality assurance and product development (e.g. EVOgard) in the company’s own laboratory
- » Partner to the power generation, construction, road building and mining industries
- » Own silo capacity
- » Operations throughout Poland

## Important factor in ensuring continuous supply volumes

“The additional volume available to us from the Opole power plant after commissioning of the new units, however, opens up further potential; this could also cover part of the demand from other areas in Germany if our own power plants no longer produce sufficient fly ash in the wake of climate protection regulations,” adds Wolfgang Beer, head of the Power Plant By-Products division at STEAG Power Minerals. For unlike Germany, Poland – and also the Czech Republic, where STEAG Energo Mineral has a further fly ash supplier under contract at the Litvinow site – are to rely even longer and more strongly on hard coal as a source of energy, and are even planning new power plants and power plant units. “Through our companies in Poland and Germany, STEAG Energo Mineral is therefore creating long-term prospects for the industries in Germany that rely on power plant by-products to manufacture their own products,” said Beer. “In conjunction with further measures such as the expansion of silo capacities or the recommissioning of the fly ash drying plant in Lünen (see report on page 16), we are also optimizing the organizational infrastructure in order to absorb seasonal fluctuations in supply and demand and to ensure continuous and reliable supplies throughout the year. ■

Fly ash management

# Fresh from the dryer

After a break lasting five years, STEAG Power Minerals restarted operations at the fly ash drying plant in Lünen in August, so as to make additional quantities ready for the seasonally rising demand from the construction industry.

Fly ash is becoming increasingly popular as an additive in concrete production, not only because it improves the properties of concrete, but also because it, as a recycling material, improves the carbon footprint of the building material in place of clinker, which would otherwise produce large amounts of CO<sub>2</sub>. It is obvious that the demand for fly ash is particularly high in the summer months: Due to the weather, there is a lot of activity on the construction sites. However, it is precisely during this period that fly ash production tends to run in low gear, as conventional power plants are less involved in power generation at that time. In order to balance these seasonal fluctuations in supply and demand, STEAG Power Minerals relies on flexible storage: "We store the fly ash that we do not sell in winter," Martin Pielke, Head of Engineering at STEAG Power Minerals explains. In addition to storage in silos, STEAG Power Minerals also has the option of storing the fly ash in the open air in a moistened state and processing it before marketing so that it functions like freshly produced fly ash again and can be delivered to customers in the usual way. The concrete additive is removed from the silos at the power plants and mixed with water in moistening systems. "With a moisture content of around 15 percent, the fly ash then has a moisture content similar to that of the soil," Pielke explains. In this state it no longer raises dust and can be stored at the site of the drying plant in Lünen on landfill-like outside areas. If there is a greater demand in the summer, the relevant quantities can be made ready for sale again in the drying plant within a short time.

**7.000 metric tons of fly ash**

were made available this year from mid-August to mid-November

## Recommissioning with a view to the future

"In recent years, the plant has not been used because the current production and the reserves in the silos have been used to meet demand," says Pielke. As this will no longer be sufficient in the future – against the background of developments in the German power plant landscape – the STEAG Power Minerals management decided in winter to put the plant, built in 2001, back into operation. "With an extensive inspection and minor repairs, we have brought the plant back into shape," Pielke reports. "The drying of the fly ash is now running smoothly. The moisture is extracted from the fly ash at the heart of the plant, the so-called fast dryer, by hot air. On fabric filters, the dried ash is separated from the airflow and transported to silos in a closed system. From there it is transported by truck to silo ships in the Lünen city harbor or directly to the customers. Quality control at site and in the STEAG construction materials and fuel laboratory ensures that the fly ash is of the right quality to meet customer requirements for use in concrete or cement even after moist storage and re-drying.

Around 7,000 metric tons were made available in this way this year from mid-August to mid-November. Martin Pielke and his team are satisfied: "With this plant, we are making an important contribution to filling the seasonal gap between production and demand and to better satisfying the wishes of our customers." ■



# 140,000 tons of coal slag on the move

After 46 years of operation, the last kWh of electricity from the 430 MW Ensdorf hard coal-fired power plant on the Saar was fed into the grid on 20 December 2017. STEAG Power Minerals secured a not inconsiderable stock of coal slag from the previous years of operation for marketing. The question – and the major challenge was: How to remove a mountain of 140,000 metric tons of slag as efficiently as possible – within one year, as contractually agreed?

The decision on the use of this considerable quantity was the simpler part of the answer: Two thirds of the coal slag is to be sent to the STEAG Power Minerals abrasives plant in Lünen, while one third is to remain in Saarland and also be used there for the production of abrasives in Völklingen. To check the quality, batches of several thousand metric tons are separated and sampled before transport. The Saarland-based laboratory Dr. Marx GmbH determines whether the material meets the required criteria for flawless production, and once it has been released, the granulate can go on its journey to Lünen or Völklingen.

While the journey by truck to Völklingen, only a few kilometers away and directly accessible by motorway, is a simple exercise, as no other services are required apart from loading equipment and tipper trucks, the transport route to Lünen is much more complicated.

## Not an option: 100 road truck trips per week

The truck would also be the simplest solution in the latter case, allowing the slag to be tipped directly in front of the production plant in Lünen after loading in Ensdorf. However, the distance of almost 400 kilometers for a tipper truck transport is not economically feasible with such a volume: Around 100 trips per week from the Saar to the Ruhr would have been necessary. Conversely, since 100 tipper truck transports per week from the Ruhr area to Saarland are

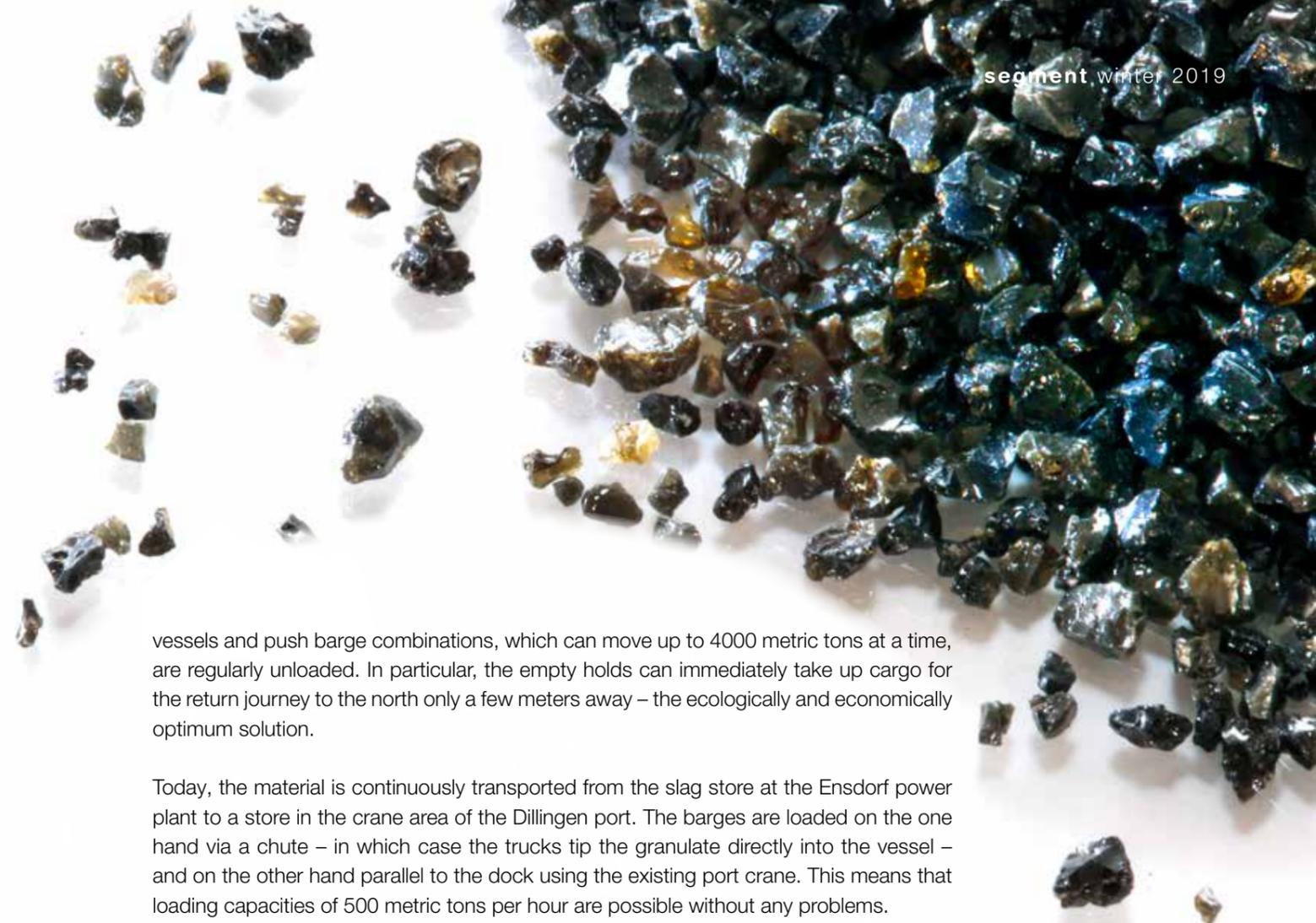
required, the trucks would have to return empty, which is neither economical nor environmentally friendly.

The review of the rail route led to the conclusion that reactivation of the rail connection on the power plant site would be possible but costly. With upstream and downstream activities for the loading and unloading of wagons, there was unfortunately no economically justifiable result despite the ecologically advantageous transport route via the railway line.

This left the waterways as an option – especially as the site has its own dock. However, an intensive examination revealed that the quay facility does not permit any arbitrary ship sizes and, in addition to sufficiently dimensioned equipment for ship loading, requires further technical equipment that is not available there. The infrastructure of the power plant dock is accessible, but has geometric and administrative disadvantages.

## Ecologically and economically optimum: transport by inland waterway

The decision was therefore made in favor of a multi-stage transport process from the inland port of Dillingen – also only a few kilometers away along the river – to Lünen. The Dillinger Hütte steelworks is supplied all year round from the port of Dillingen. There, 135 meter long inland waterway



vessels and push barge combinations, which can move up to 4000 metric tons at a time, are regularly unloaded. In particular, the empty holds can immediately take up cargo for the return journey to the north only a few meters away – the ecologically and economically optimum solution.

Today, the material is continuously transported from the slag store at the Ensdorf power plant to a store in the crane area of the Dillingen port. The barges are loaded on the one hand via a chute – in which case the trucks tip the granulate directly into the vessel – and on the other hand parallel to the dock using the existing port crane. This means that loading capacities of 500 metric tons per hour are possible without any problems.

The voyage by inland waterway vessel via the Saar, Moselle and Rhine to the Datteln-Hamm Canal takes a good five days. Once it arrives at the city port of Lünen, the cargo vessel is unloaded by crane; the tipper truck is used again on the last few kilometers to the storage facility at the production plant at Moltkestrasse. Daily capacities of up to 2000 metric tons can be achieved there. Should it not be possible to transport the coal slag directly from the city port of Lünen by truck, a port depot similar to the one in Dillingen is also available there. If possible, however, the entire cargo of incoming vessels is immediately unloaded and brought to the final storage location.

The logistics chain was established at the beginning of June 2019. In the following two months, around 30,000 metric tons of slag was moved. In summer, due to the low water level in the Rhine, material was temporarily only transported overland to Völklingen. With a sufficient water level in the Rhine, the transport to Lünen was resumed “at full steam” in order to finish the complete relocation by the beginning of 2020. ■

### The Ensdorf / Saar power plant

- Hard coal fired power plant with slag tap furnace (units 1 and 3)
- Construction of units 1 and 2 in 1961, unit 3 in 1972
- Shutdown of unit 2 in the mid-1990s
- Closure at the end of 2017
- Total capacity 430 MW
- Electricity production 2 billion kWh p.a.

## Coal slag

Coal slag consists of small, vitreous granules, chemically and mineralogically comparable with the volcanic glass obsidian. The main component is the mineral content of the hard coal. In the slag tap furnaces at the power plant, the molten, incombustible components are drawn off at temperatures of 1,500 °C and shock-cooled in a water bath. The granulate obtained in this way contains neither free silicic acid nor soluble salts and is characterized by high environmental compatibility. The disposable abrasives ASILIKOS, AFESIKOS and ASILT are produced from this material in grain sizes between 0.04 and 5 millimeters at the STEAG Power Minerals blasting abrasives plant in Lünen. The plant is one of the most modern in Europe and can produce around 160,000 metric tons of abrasives per year.

Environmental impact assessment for fly ash and bottom ash

# Directive on new regulations available

Five years after the European Court of Justice banned national additional requirements for construction products harmonized at the European level, the new Directive of the German Committee for Reinforced Concrete (DAfStb) once again provides a binding regulation for the level of protection required by the building code. Fly ash and bottom ash can now legally continue to be used as safe concrete additives or light aggregates for concrete.



Martin Pielke, Head of Engineering

In 2014, the European Court of Justice (Case 100/13 of 16.04.2014) had declared the additional national requirements for construction products harmonized at European level introduced via the German list of construction rules to be inadmissible. This also affected proof of the environmental compatibility of fly ash for concrete to DIN EN 450-1 and bottom ash as light aggregates to DIN EN 13055-1.

One way of maintaining the level of protection required by the building regulations was to transfer the requirements from the product to its application: For example, it was reworded that components containing fly ash or bottom ash must not have any harmful effects on the soil or water courses. The requirements were laid down in 2017 in a model Administrative Regulation for Technical Building Regulations (MVV-TB), in which the power industry, marketers and industry associations had jointly advocated corresponding criteria for the further environmentally compatible use of fly ash in concrete (see SEGMENT Winter 2017). The requirements can be found in Section A 3.2.3 with reference to Annex 10, "Requirements for structural works with regard to effects on soil and water (ABuG)" and Annex A 3.2/3.

However, the MVV-TB only mentions requirement parameters; the German Committee for Reinforced Concrete (DAfStb) subsequently began to draw up a corresponding guideline for the practical implementation of the verification and monitoring requirements. Until the guideline is published, manufacturers can continue to declare compliance with the old testing rules for their construction products within the framework of a voluntary declaration.

The new DAfStb directive. "Use of silicon-rich fly ash and bottom ash in concrete components in contact with soil, groundwater or precipitation" now converts the requirements of the MVV TB into a monitoring regulation. Compliance with the system and – if applicable – the material requirements will continue to be verified by external monitoring. In future, manufacturers will declare conformity with the DAfStb directive in their declaration of performance in accordance with the EU Construction Products Regulation. A reference to this conformity will also appear on the delivery documents. The conversion will take place after notification of the directive to the European Commission and its subsequent publication in spring 2020.

The adjusted declarations of performance for the fly ash grades marketed by us will be made available for download on our homepage in good time. ■

#### Contact

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# Gunter Reiner: Retirement “with a broad grin”

Powerment was founded in March 2010 as a joint venture between EnBW and STEAG Power Minerals, and the business officially started independent operation at its base in Ettlingen on July 1, 2012.

The parent companies had tasked Wolfgang Beer (STEAG) and Gunter Reiner (EnBW) as directors with building up the company “from nothing”. After nine years, in which Powerment has shifted almost 10 million metric tons of power plant by-products, Gunter Reiner embarked on his well-earned retirement in August.

## **Mr. Reiner, looking back, what were these nine years of Powerment like for you? How did you feel when you left the office in Ettlingen's Goethestrasse for the last time?**

It all feels very good to me. We've built up a powerful organization that I think does a great job, so I'm leaving with a very good feeling. I have 48 years of experience in the profession behind me, and the fact that I have been able to play such a decisive role again over the past nine years, by building up a completely new company, fills me with great satisfaction. I can let go and go into retirement very satisfied and with a broad grin.

## **How easy or hard was it for you to decide to join Powerment at the start?**

At that time, I had already worked in various responsible positions at EnBW. When EnBW asked me whether I could imagine switching to another area of supply and disposal as a director of a new company dealing with the marketing of power plant by-products, it sounded very attractive. I didn't have to think about it very long – although I had no idea what to expect. But I saw it as a unique opportunity to do something completely different, something new in a responsible position, and I took it relatively quickly. Looking back, the decision was absolutely right.

## **What did you regard as the greatest challenge?**

The actual development of the company, with which we started in mid-2011. Due to the antitrust regulations, Powerment had to become what is termed a fully functional company, i.e. completely independent with its own offices, its own staff, its own IT, and operate independently of the two parent companies. This structure is a kind of greenfield site – looking for premises, finding employees, developing an organization and designing processes, setting up a complete ERP system and all other steps, from registering with the Chamber of Commerce and Industry to the employment contracts... getting it all done by the scheduled deadline and seeing whether everything actually worked out: that was extremely exciting.



**” Building up a totally new business, so to speak on a greenfield site – getting it all done by the scheduled deadline and seeing whether everything actually worked out: that was extremely exciting.“**

Gunter Reiner, former Managing Director of Powerment

## **What do you especially remember about the past?**

As you know, I came from the power industry, worked in several power plants and in central functions within a large company, in materials management and on the purchasing side. The marketing of power plant by-products to the construction industry, doing a salesman's job, was a completely new area for me. It was really very helpful that my fellow director from STEAG Power Minerals, Wolfgang Beer, took me by the hand, so to speak, visited my customers and partners with me and gradually introduced me to the subject. That was an exhausting, but incredibly interesting time. The change within my work was already exciting, and then also moving into an industry with very, very interesting people, with medium-size enterprises and large groups... It was a great experience to get involved with these new people and new environments again and again. ▶▶▶

**When you look back at your professional career as a whole, what experience would you like to pass on?**

The fact that it is very worthwhile to face new challenges. I started out in the classic way with an apprenticeship, then studied business administration at night schools with a focus on materials management and graduated as an IT specialist. I first worked in very small companies, then in large corporations such as EnBW with over 20,000 employees. Learning how differently such companies function was very instructive; they are quite different worlds. Even then, being able to create my own world to a certain extent was a very special extra. And what I have learned in all this time is that the issue of personnel management is one of the greatest challenges you can face as a manager. There are the factual topics that can be clarified, but leadership is a constant challenge. You never stop learning and you have to get involved with every employee again and again, because everyone is wired differently. At the beginning of my professional career, when I first took on management responsibility, I totally underestimated that. You only grow into it with time; you can read a lot and you can acquire a lot of knowledge. But then putting all that into practice is a completely different matter. Of course, employee leadership is recognized as a management function in large companies, but it is not easy to reach and motivate everyone. And leadership also far too often plays second fiddle to the concrete tasks. That is actually wrong: Leadership is far too important as a topic and should be given a much higher priority. And you have to practice that through your own personality and remain consistent. How you behave and what you expect from your employees, has to be coherent. That is very important. Otherwise you'll fail immediately.

**What will you miss when you leave Powerment behind, and what are you most looking forward to?**

I will certainly miss the many people, the employees, the business associates I met, and with whom I built up a relationship of trust. On the other hand, new and exciting tasks are once again waiting for me. I have always been involved in voluntary work, earlier as a member of the parents' advisory board at school, for some time now in an urban district initiative in Heilbronn and this year as a Federal Garden Show ambassador. As a new task, I intend to expand an activity that has always given me great pleasure: I enrolled in a course for literacy mentors and then read aloud to children in kindergartens and schools. And I'm particularly looking forward to the end of October – when our household will be joined by a dog.

**How do you regard the positioning of Powerment, and how do you see the company's future?**

I believe that coal-fired power generation will continue to exist well into the 2030s, especially in southern Germany, because power plant capacities will simply be needed. I also think that the quantities of power plant by-products created will remain stable in general over the next few years, but will be highly volatile – one year more and one year less. However, Powerment can still develop good business because the material is in great demand. And Powerment is doing exactly that. The organization is in place, the management is well positioned and my successor has already been familiarized with his duties. There will certainly be new challenges – dealing with maximum volatility, importing additional quantities from other countries such as the Czech Republic or Poland, developing new fields of business with alternative materials such as pulverized limestone or granulated blast furnace slag. All this has already been planned and is under strategic development. In short: Against this background I am not afraid for Powerment. ■

Literacy mentors go to a kindergarten, primary school, local public library etc. for 1-2 hours a week and read age-appropriate texts to a small group of 4-5 children. They encourage comments and questions and help children to read a piece themselves. The aim is to promote reading competence and to awaken the desire to learn through the desire to read. Throughout Germany there are a large number of agencies and coordinators who provide information on the tasks of literacy mentors and are always happy to hear from interested parties.

**... and a warm welcome!**

Christoph Kenter is already well known at Powerment in Ettlingen as the successor to Gunter Reiner: Since September, the graduate in mechanical engineering and production technology and former director of the district heating company Fernwärme Zürich AG has been familiarizing himself with his new duties at the SPM subsidiary. He will be introduced in detail in the next issue of SEGMENT!

# Successful on the market for more than 50 years

**Stefan Krane**

Executive Partner of the Emsland Transportbeton-Group

Fast, reliable and on time – for more than 50 years, the vehicles with the striking green and white stripes have been supplying the construction sites in East Westphalia with ready-mix concrete. In 1962, when a number of construction companies from the district guilds of Gütersloh joined forces to found a company for the production of ready-mix concrete, that still met with some skepticism; the reconstruction of Germany after WW2 seemed to be largely completed, and when the company with seven employees and five concrete mixers was launched in the town of Rheda-Wiedenbrück, nobody even had a clue as to what would develop in the coming years in the construction industry.

Today, the Emslandbeton Group, with a fleet of more than 60 concrete mixers coordinated by GPS, around 110 employees, eight locations (including testing laboratory) and a broad product portfolio ranging from gravel, sand and mortar to ready-mixed concrete, system building blocks and liquid soil, is one of the leading partners of the construction industry in East Westphalia. The company is still family-owned and the next generation is now at the helm. STEAG Power Minerals talked to Stefan Krane, executive partner of the Group. ▶▶▶

**Mr. Krane, it is a remarkable success story that Emsland Transportbeton can look back on. What in your view do you owe that success?**

In principle, we are one of the last remaining business enterprises founded by construction entrepreneurs and, as an anchor company of the Frankenfeld family, we have managed through the years to maintain calm and consistency in the company's development. The generation preceding me had always paid attention to maintaining a high level of liquidity, which kept the company afloat in bad times, and that remains our principle. A great deal has always been invested to keep the plant technology and vehicle fleet up to date. Having our own fleet is very important, because we want to live up to our motto and deliver our ready-mix concrete quickly, on time and reliably to our customers. We manage that by maintaining our own fleet of vehicles. Also, our plant network in any case accounts for a large share. And then, of course, there is the security of the raw material supply; on the one hand from our own gravel plants and the quarry, and on the other hand through cooperation with good, strong partners. In my view, this is a very special point. It is important to us to work with our partners as equals. We cultivate an exchange of ideas and attach importance to a good relationship; this also includes keeping together and helping each other in difficult times. With this philosophy, Johann Heinrich Frankenfeld led the company to where it stands now, and this philosophy should remain the hallmark of Emsland Transportbeton in the future.

**So that provides a good cushion for the future? How do you see the development of the Emsland Group in the coming years?**

We have to stick to it and work hard: Without that you can't do it. We are continuously developing, and we must also adapt to the markets. After the takeover of Bibet Beton GmbH in Bielefeld two years ago, the next investment in Hellweg Transportbeton in Soest is due on 1 January – that will then be the 8th plant in the Emsland Group. Logistics is also an important building block. The Henksmeier family gave us the opportunity to take over their truck mixer and pump business. This has made us the largest concrete logistics specialist in East Westphalia. We are also continuing to develop our products; liquid soil currently plays a special role, which is of great relevance especially in the Ruhr area with regard to mine filling. With our building materials testing laboratory, which, incidentally, is headed by Corinna Schumacher,

Germany's highest ranking concrete technologist, we also enable a broad transfer of know-how through regular courses and seminars. And of course we are also committed to working in an ecologically sustainable manner. However, we don't see this ideologically, but rather strive to practice objective and pragmatic environmental protection, and to do what makes sense. Our fleet of vehicles runs almost exclusively on Euro 6 emission standards, we try to conserve resources through audits, and with our current product, green concrete, we have recently added an innovative recycling product to our range. However, the regulatory requirements in Germany really don't make it easy for us; other countries such as the Netherlands, for example, have a more practical approach.

**Do you have an example of this?**

There is the keyword "shadow pricing". In the Netherlands, demonstrably saved CO<sub>2</sub> in the manufacture of products is included in the price as a financial bonus; when tenders are invited, the corresponding products move up sharply in the ranking of the state authorities. In ready-mix concrete, additives such as fly ash, which we purchase from STEAG Power Minerals and which can be used to replace a large proportion of clinker in concrete, provide good opportunities to reduce CO<sub>2</sub> emissions. The same applies to cement manufacturers using limestone powder, where resources such as gravel, which are slowly becoming scarce, can also be saved. In economic terms, this model would mean that the more environmentally friendly and less CO<sub>2</sub>-poor you design your products, the cheaper they would actually have to be, and that means that these products would also make a better impression on the customer, because the customer would also be aware of them. With our CO<sub>2</sub> approach in Germany, where this is not considered in calls for tenders, but simply the products that are rich in CO<sub>2</sub> emissions are made more expensive by carbon credits, that incentive is not available. As long as recycling materials or additives are seen as materials that cannot be credited to the CO<sub>2</sub> balance, there is of course no incentive for the user to save anything.

**So the issue of climate and environmental protection is currently the biggest challenge in the concrete and cement industry?**

Yes, especially with regard to resources and regulations. In Germany, innovative ideas are often difficult to implement.

And innovative ideas are needed more than ever – what is happening with CO<sub>2</sub> in the power plant industry at the moment will certainly also await us in the cement industry in a few years' time. There are already no longer any mining permits for sand and gravel, and the new climate law is also reducing the mass flows for additives and aggregates such as fly ash or FGD gypsum. Of course, it is important to find solutions to the climate problem, but they must be pragmatic; ideological solutions do not in my opinion help. If I have to drive a truck 400 km to fetch gravel or have to bring raw materials to our plant by heavy oil transport vessel with two transshipments through Rotterdam and then by inland waterway, that is neither economically nor ecologically feasible. There is no holistic approach. Climate and resource protection is a major issue, and to a certain extent I am also involved when it is said that Germany, with its strong economy, is a role model. That is good and important. But you also have to think it through, otherwise it will be a huge problem for everyone involved: For the people who can no longer afford the life they want to lead, for the environment – and quite a few well-intentioned protective measures have backfired – and for the economy. At the end of the day we are business enterprises. As a family business, we regard ourselves as responsible for the region and the environment. But if we don't work with a commercial focus, then in a few years' time we will no longer exist. Solutions have to fit into that field of tension.

**What do these pragmatic solutions look like in the case of the Emsland Group? You mentioned the product "green concrete"…?**

Exactly. We have had green concrete in our range for some months now, and it looks like it has actually already found its place on the market. It was probably the right product at the right time, and a little bit of luck was also part of it. Ultimately, it takes a few years until a product like this is ready for the market. The principle of green concrete is that we prepare high quality crushed concrete from paving stones for processing in concrete. About five years ago, we started experimenting with this technology at our Lintel Group subsidiary. The broken concrete results in a very good, homogeneous material with which we can replace the aggregates in our concretes to a large extent and thus conserve the natural resources of grit and gravel. We

then went one step further and considered how we could also prepare material from demolition projects accordingly. The problem here is the contamination by other materials: in order for the crushed material to be usable again for concrete production, it must be clean. The demolition and recycling companies need a completely different construction site management to ensure that. That is why we got together with companies and looked for ways to get the demolition products to be collected in such a way that they would subsequently result in a perfect product.

It all sounds so simple and straightforward now, but it didn't turn out that way. At the beginning, our sales department was more than skeptical, and production wasn't really happy about it either, because it was also a cumbersome product. They had to build more cabinet volume, needed silo capacity in the plants, and had to reorganize part of the logistics. This is not easy for any company. It was a lot of work, but it seems to be bearing fruit. The fact that companies suddenly saw an opportunity here to create a green conscience for themselves and were then able to quickly implement a super reference project played into our hands. But none of this would have worked if we hadn't pragmatically searched at the beginning for ways to get that kind of product approved at all. That wasn't so easy either.

**The keyword is pragmatic solutions: Can you also see an interface to STEAG Power Minerals?**

Absolutely. I really appreciate the cooperation with STEAG Power Minerals – also and above all because we have a very trusted supplier relationship. If there are problems, we can address them openly and solve them. At STEAG Power Minerals we have contacts who not only listen and think together with us, but can also make the appropriate decisions. There is nothing worse for a medium-sized entrepreneur than associates lacking decision-making capacity. In cooperation with STEAG Power Minerals, most things are handled quickly, often through the short official channels. This makes the cooperation very pleasant. It goes without saying that the products are suitable for function. Here, too, we have only had a good response. In view of the economic efficiency of our cement and concrete products, we would be very pleased for the future if we could intensify our cooperation in the area of additives and fillers such as fly ash. ■

# Generation Z on the up

In the form of the new trainees, a generation that has grown up completely in a digital world and has been involved in the rapid upheavals caused by technical development from the very beginning is now entering the world of work. The members of Generation Z are conscious that their future is less predictable than that of their parents and earlier generations. In life and work, they set different priorities from those of their predecessors.

Individualization, independence and flexibility are important to the new generation and at the same time are part of their strengths. A challenge for training – and also an immense opportunity: It is precisely these strengths that companies need now if they are to assert themselves and position themselves for the future in the light of the unpredictability of market events, the fast-moving nature of products, and the increasing difficulty in assessing regional trends and transnational developments. STEAG Power Minerals is looking forward to the fresh wind that the new generation of trainees will bring – and to a profitable exchange of ideas for both sides!

We are presenting two representatives of the new generation of trainees in the form of Miriam Burken and Guilian Perus:



**Miriam Burken was born in Gelsenkirchen in 1998 and after graduating from high school in 2017 has already completed her training as a diet assistant at Essen University Hospital. At STEAG, she will start a new field of work in September as a trainee in wholesale and foreign trade.**

**Guilian Perus was born in the millennium year of 2000 in Oberhausen, where he also went to school. After graduating from high school, he is now starting an apprenticeship as an industrial mechanic at MINERALplus.**

## **How did you come up with the idea of training at STEAG?**

The trigger was an absolutely motivating interview with a STEAG Power Minerals employee. What she told me about the company and the apprenticeship appealed to me a lot and I thought, "That's got it sorted now."

## **What do you like to do in your spare time?**

Of course, I really like to meet my friends. After a long day at the office, I mainly go to the gym. And I like to dance!

## **What expectations and wishes do you have for your training?**

Of course, I expect a good preparation for the final examination and professional life from the apprenticeship.

I hope that it will be as varied as I imagine and that I will have the opportunity to take part in a lot of interesting seminars. Colleagues who accompany and support me through my training are also important to me. And if there is a chance of being hired in the end, that would be great.

## **What experiences have you already had?**

My experience has been that people are very openly accepted as trainees at STEAG. During my first visit, I was immediately introduced to everyone and shown around, and how everything works was explained. It makes you feel right at home.

And a look at the very interesting range of seminars on offer in Essen has already fully confirmed that I had made the right choice of company.

## **Ketchup or mayo?**

I'm not a mayonnaise type at all – that's why ketchup is the obvious choice!

## **What special characteristics or strengths do you have?**

A whole series: I can work well in teams, I like clear objectives and I am capable of learning. I also have a good deal of patience.

And I am fully motivated to take the next step in my professional life at STEAG!

## **How did you come up with the idea of doing your apprenticeship at MINERALplus?**

MINERALplus is not far away from my home, so an application was the obvious step. During the job interview and the recruitment test, I particularly noticed the family atmosphere, everyone was very nice, it seemed very harmonious, even during the tour of the company and the laboratories. I liked that.

## **What do you like to do in your spare time?**

I have a light motorcycle driving license, so riding a motorbike is naturally also my hobby; I would also like to obtain a driving license for a heavy bike. And of course I like to go out and meet my friends. At home we have a home gym, where I exercise from time to time.

## **What expectations and wishes do you have for your training?**

I would like to be able to complete my training in a short time, because I would like to go to university as well. It would be ideal if I could do that in addition to my job at MINERALplus. Of course, I would also be happy to be taken on after my apprenticeship or university course.

## **What experiences have you already had?**

I really like the fact that I'm already being sent wherever there might be something interesting for me to see – also that I'm already allowed to play an active role in some things. That's a lot of fun and gives me the feeling of being needed even after the short time I've been here. The working atmosphere is simply very pleasant.

## **Ketchup or mayo?**

It depends ... really no mayonnaise with sausage. But of course it goes with French fries. On hotdogs everything is allowed – mayo and ketchup.

## **What special characteristics or strengths do you have?**

I can work well independently, see where there is something to be done and know how to occupy myself sensibly. Working precisely and finding creative solutions are also part of it; I learned that from my parents.....



# Learning from life

Teachers and parents know only too well how difficult it is to draw the attention of pupils to the subject matter during puberty. But there is another way: When life itself becomes a school – as the Freie Waldorfschule Dinslaken does with its ninth graders. For four weeks, the young people help with construction projects in Moldova – and not only help the people there, but also develop their personalities, learn new skills, and last but not least, get to know themselves better. A project that STEAG Power Minerals is happy to support.

“What’ll I ever need that for, anyway?” This has been one of the standard sentences of bored teenagers in school for generations. In the “Learning from life” project at the Freie Waldorfschule Dinslaken, however, that sentence disappears for four weeks at a stretch. In the construction project for grade 9, everyone knows in the evening exactly what every move during the day was good for, where the planning was right, what would have been better if done differently, where and why the cooperation worked out well or not so well – or where the ingenious idea for solving an unforeseen problem perhaps just came from a person from whom you least expected it.

## Discovering that you are important, can do something and change something

“Learning from life”: This is a development aid project that the Freie Waldorfschule Dinslaken has now carried out for the fifteenth time with its ninth graders. For four weeks the young people travel to Romania, Russia, Bulgaria, Hungary or Moldova to lend a hand in various projects. In 2019, they traveled to Copceac in Gagauzia on the southernmost tip of the Republic of Moldova, on the border with Ukraine, some 120 km from the Black Sea. Western standards are unknown in the region; people live with and from the bare essentials – even the phenomenon of running water from the tap is not a matter of course every day. Here the pupils experience a reality at first hand that is virtually non-existent in the channels otherwise used by their age group. And they learn much more: that they can actively change something, create something, improve something. When the young people return to the classrooms in Dinslaken after their four weeks of project work, they usually take with them their first profound experiences of what it means to be important to other people in doing something – and the awareness that they have created a little more quality of life for the people in the village. And that is really tangible on



the ground: For example, the school students from the last three years brought a dilapidated holiday camp for about 80 children into shape, were involved in the construction of new buildings and the renovation of existing ones, and paved and concreted paths and terraces. Roofs were covered, windows repaired, sanitary facilities renewed and much more was accomplished. The young people work in small groups, led and guided by educationally and technically trained supervisors.

## Initiative and responsibility from the preparation stage onwards

But these four weeks on site are actually only the crowning glory of the project. As much as one year before, the young people start to plan with the support of parents and teachers and to take care of the necessary funds – from travel to and from the site through accommodation and service up to building materials. Donations are collected, cakes sold or performances organized until there is enough cash to tackle the project.

“The pupils can contribute and develop completely different skills and competences in this project than in the classical school learning environment. Quite a few of them not only surprise the others, but also themselves,” as one teacher sums it up. Last but not least, the young people learn both in the preparation phase and on site how to plan things, how to make the best of themselves, how to deal with and get on with others, and how to question behavior and reactions. They experience acting on their own responsibility – and discover that they themselves can shape things, even the future.

“This project has totally inspired us,” says Sarah Höfer, Head of Marketing and Communications at STEAG Power

Minerals. “The sense of responsibility, commitment and team spirit that the young people learn here is invaluable for their future lives. Values such as communication, consideration and esteem, which are essential in adult life, can also be experienced in an impressive way. Four weeks of the project “Learning from life” at the Freie Waldorfschule: From the point of view of the overall school curriculum it is rather a small excerpt – but for the young people a huge step towards growing up.

STEAG Power Minerals has supported this project with great pleasure and conviction, congratulates the Freie Waldorfschule Dinslaken on this outstanding concept and wishes them every success and, last but not least, fun during the future project weeks! ■

## Profile

- » **Project location in 2019:** Copceac / Gagauzia (Republic of Moldova)
- » **Population** (as of 2014): 2,264
- » **Gagauzia:** Population approx. 134,500, area 1,832 km<sup>2</sup>
- » **Moldova:** Population 4,455,000, area 33,800 km<sup>2</sup>

### Copceac – Gagauzia – Moldova – Europe

Moldova is a land locked country in southeastern Europe. It borders the EU state Romania in the west. In the north, east and south, the Republic of Moldova is completely surrounded by Ukraine, so that there is no direct access to the black sea, which is only two kilometers away. From 1812 it belonged to the Russian Empire, after the First World War largely to Romania, and after the Second World War to the Soviet Union. With the end of the USSR in 1991, the country finally became independent.

Large parts of the population live in great poverty. The official language is Romanian (in Latin script), but Russian is still the most spoken language; Ukrainian and Gagauz (similar to Turkish) are spoken in some areas. The Cyrillic alphabet was introduced in 1945, but the Latin alphabet has been in use again since 1989.

Gagauzia (officially the Autonomous Territorial Unit of Gagauzia) is an autonomous territory within the Republic of Moldova, with its own government and three official languages (Gagauz, Russian and Romanian). It is home to the majority of the Gagauzian population, and its language and culture have an official status there. With an area of about 1,800 km<sup>2</sup>, Gagauzia is smaller than Saarland and with about 85 inhabitants per km<sup>2</sup> even more sparsely populated than the rest of Moldova. Agriculture forms its economic backbone.

The village of Copceac is situated in the extreme south of Gagauzia, at the border with Ukraine.

(Source: Wikipedia, independently translated)



## Troisdorf landfill: modern sealing and optimized geometry

With sections in various stages from the current filling to the recultivated biotope area, MINERALplus, as the operator of the Troisdorf landfill, is not likely to run out of work. After the sealing of the base for section DA5 Lot 2, which is currently in use, has been completed and storage has started (see SEGMENT of summer 2019), the final surface sealing of the sections already filled is due. Here, too, new challenges awaited us.

Preparations for the surface sealing of the sections already filled at the Troisdorf landfill have been underway for some time, and the planning approval was obtained several years ago. At that time, a simple mineral seal was planned as the state of the art; today, the development has progressed. Accordingly, the sealing system was first adapted to reflect current capabilities: In addition to the mineral sealing component, there is now also a plastic sealing membrane and a sealing control system; a layer of recultivation soil up to two meters thick is applied above it, which, among other things, ensures that no rainwater reaches the technical seal.

As part of the revision of the technical details for the seal, the geometry of the surface was also checked. It turned

out that one embankment was too steep for a permanently stable seal and that it had also been laid at a right angle. Since the removal of surplus material from the filled landfill body was not an acceptable solution, other methods had to be found. In a constructive dialogue with the District Government of Cologne, a plan was developed to “lean” a significantly flatter bed against the steep embankment to create. A solution with double benefits: On the one hand, this results in a surface with an optimum gradient - and on the other hand, 1000 m<sup>2</sup> less surface area has to be sealed than with the original variant.

By the end of 2019, approx. 30,000 m<sup>3</sup> of excavated earth of landfill class 0 will be used to support the seal on a total surface area of 4,500 m<sup>2</sup> ■

## MinCom®DVM 01 K: Successful launch of the new formula

After four years of development work, MINERALplus was able to submit the application to change the formula for the packing material MinCom®DVM 01 K to the responsible authority for approval in autumn 2018. In the meantime, the production process has been successfully modified.

The MinCom®DVM 01 K slurry packing mixture is used at the site of the soda works in Stassfurt to fill the cavities of the underground caverns and thus stabilize them. The dry construction material produced in Gladbeck is mixed on site with brine to form a suspension, which is then pumped into the caverns and solidifies there. The packing material itself is produced entirely from secondary raw materials in the form of powdered waste, for which a certain proportion of admixture must be maintained as required by the long-term safety certificate. When the waste types defined in the mixture had ceased to be readily available in the proportions previously used, MINERALplus decided to modify the formula.

### Smooth changeover

By July 30 as planned, the first 48,000 m<sup>3</sup> of packing material had been produced according to the new formula, mixed on site and successfully pumped into the caverns. “The changeover took place virtually automatically,” as project manager Dietmar Andresen remarks, confirming the good cooperation between the teams at the production sites in Gladbeck and Stassfurt. From clearing the product silos in Gladbeck and the receiving silos in Stassfurt to briefing the production staff on the special features of the new formula: “Everything went like clockwork, without any incidents or malfunctions.”

### Next modification ahead

The team competence that has been demonstrated will soon be brought to bear again by those involved: Thanks to the experience gained from the completed project, the studies for the next development of the formula are already cut and dried. The formula then supplemented will allow even more variability. ■

### Tips for more details ...

... on packing of the caverns:  
SEGMENT Winter 2017, pp. 16+17  
... on modification of the formula:  
SEGMENT Winter 2018, pp. 40+41



“Everything went like clockwork, without any incidents or malfunctions.”

Dietmar Andresen, Head of Quality Management, Laboratory and project development at MINERALplus GmbH

### Contact

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# Full steam ahead

To obtain high-quality products from crude oil, complex processing processes are necessary. A vital factor is steam. For the Ruhr Oel refinery in the Scholven district of Gelsenkirchen, STEAG has developed an environmentally friendly steam generation system that can serve as a model for other refinery locations.

Anyone driving past the site of the international petroleum company BP in Gelsenkirchen-Scholven knows the scenario: tall chimneys, miles of pipelines and an impressive number of huge storage tanks. Here, STEAG is currently building an innovative energy generation system with the aim of significantly reducing environmental emissions and achieving greater efficiency in plant operation.

Over the next ten years, the BP subsidiary plans to invest around two billion euros in environmentally compatible modernization projects. One of the central investment measures is the “Steam and Power” project, with which refinery gases are to be used to generate process steam and, to a small extent, also electricity for the refinery’s own use. STEAG was appointed as EPC contractor for the steam section. “Our aim is to secure jobs in Gelsenkirchen in the long term through safe and environmentally compatible action and high profitability. The investment in a modern steam supply system is an important step in this direction,” says refinery manager José Luis García Galera.

## Customized system development

The core element of the future steam supply at the Scholven site will be four of the latest, state of the art steam boilers, which will be erected on the refinery site. The energy system developed by STEAG provides for heating of the boilers manufactured by Duisburg-based Standardkessel Baumgarte GmbH with the refinery gas produced

at site. This energy recovery can reduce the number of gas flares required for safety – for example in the start-up and shut-down of the refinery production facilities. This means fewer emissions. At the same time, the new energy-efficient steam boilers replace the existing steam supply system, which has been in operation for decades, with an adjacent coal-fired power plant.

At STEAG, Volker Veelmann is responsible for this trend-setting project. “With a project volume in the hundreds of million euros, the contract is of great importance to our company,” says the former manager of the STEAG power plant in Bergkamen. The experienced engineer is currently in charge of coordination: “For the project, we have integrated areas of expertise from throughout the company and can now be very proud of this joint achievement.”

## Concerted expertise from throughout the Group

Rüdiger Völkner as site manager and Christian Hensel as technical manager are two of Volker Veelmann’s most important supporters in the “Steam” project. At the moment, it is the turn of process engineer Völkner: “From excavating the pits for the foundations up to commissioning, we expect a construction period of around two years.” Most recently, the construction sections were prepared using the vibratory tamping method. Columns are rammed into the ground to compact it so that it can support the steam boilers, which weigh several hundred tons.

In the refinery process, desalinated crude oil is first heated to around 400 degrees Celsius in a tube furnace and then fed into the lower part of a very tall rectification column. Steam (process steam), which drives the evaporation of the crude oil, is fed into this column at high pressure. The column contains several compartments separated by horizontal walls. Overflow openings allow lighter fractions to flow into the higher compartments, and an outlet serves to discharge liquid products from each compartment – including the substances that are the basis for fuels such as gasoline and diesel oil.

These steam boilers will then produce the process steam for the refinery systems, with which the crude oil consisting of hydrocarbons is heated to such an extent that a certain component becomes gaseous and can thus be separated from the other constituents. This produces gasoline and diesel oil, among other things.



“For the project, we have integrated areas of expertise from throughout the company and can now be very proud of this joint achievement.”

Volker Veelmann, Production division at STEAG GmbH

Christian Hensel is responsible for this part: “Each of the two boilers in the northern part of the refinery will generate 140 metric tons of steam per hour at a pressure of 145 bar. In the two boilers in the middle section, there will be 120 metric tons of steam per hour each, at a pressure of 107 bar,” the technical manager explains. “And the 15 MW condensing turbine installed in the central section uses the process steam not otherwise required to generate electrical power from surplus refinery gas, and that power is intended for the refinery’s own requirements.

For safety reasons, redundant installations are planned in both parts of the plant: “One steam boiler at each location would suffice. Should that fail, the system would still be fully operational thanks to the second boilers. This so-called (n-1) concept ensures in all cases that all the gases produced can be used to generate steam, and therefore there is as little need as possible for flaring,” says the STEAG engineer

## Major potential for the future

The systems are to be handed over to BP in autumn 2021. By then, Volker Veelmann and his team will have thoroughly tested the concept for practical suitability and safety. For although the planning was established individually for BP’s Scholven site, the basic concept has far more potential: “With increasing environmental awareness, the requirements at refineries will also become more stringent,” says Volker Veelmann. “And with the concept implemented here, STEAG offers refinery operators an opportunity to meet future demands in terms of emissions and efficiency. That’s why we see this as a reference project for the future.”

The main fuel used for steam generation is the refinery gas produced at the site. This utilization as energy can reduce the number of flares required for safety – for example during start-up and shut-down activities of refinery production facilities. At the same time, the new energy-efficient steam boilers replace the steam supply from the neighboring hard coal fired power plant, which has been in place for decades. Another advantage of the STEAG concept is the significant reduction of emissions.



(Left to right) André Kremer – Managing Director of Gildemeister energy solutions; Dr. Maurice Eschweiler – General Representative of DMG Mori AG; Dr. Ralf Schiele & Ulrich Sigel – Directors of STEAG Energy Services

„With SENS, we are becoming even more competitive in the field of energy from renewable sources.“

Dr. Ralf Schiele, Chairman of the Board of STEAG Energy Services

# „Looks like a SENSational future“

“If it fits perfectly, it makes SENS” is how the website of the former GILDEMEISTER energy solutions has been greeting its visitors since July 1, 2019. This play on words results from the market launch of STEAG Energy Services’ newest subsidiary: STEAG Solar Energy Solutions – created by the takeover of solar technology specialist GILDEMEISTER from machine tool manufacturer DMG MORI.

With over 8000 installations in around 40 countries, the new subsidiary of STEAG Energy Services has well-founded industry experience, particularly in the field of photovoltaics. “With the takeover of GILDEMEISTER energy solutions, we have successfully implemented an important strategic strengthening of our service portfolio, especially in the megatrend of photovoltaics. The extensive know-how and the international network of GILDEMEISTER energy solutions bring us a big step forward in this growth market,” says Joachim Rumstadt, Chairman of the Board of Management of STEAG.

The core competencies of SENS include the development and turnkey construction of large open air photovoltaic systems. In addition, SENS offers customers from trade and industry a comprehensive service package from operation and maintenance to the creation and implementation of holistic energy solutions and the optimization of energy requirements.

“With SENS, we are becoming even more competitive in the field of energy from renewable sources,” as Dr. Ralf Schiele, Chairman of the Board of STEAG Energy Services, sums up the development. He welcomes André Kremer, Managing Director of GILDEMEISTER energy solutions, with his team on board: “I wish all our new colleagues a great start at STEAG and look forward to working with them.” The new SENS Managing Director in turn looks to the future with great optimism: “We are looking forward to expanding our service and product portfolio together with STEAG and to making it even more attractive. But the most important thing for our customers is for the team and all our contacts to be retained,” Kremer emphasizes. Because all the 120 employees of GILDEMEISTER energy solutions at the main location in Würzburg as well as the subsidiaries in Stuttgart, Italy and Spain were taken over. And they even urgently need reinforcements for the challenges they have set themselves: With the slogan, “Looks like a SENSational future – become a SENSineer”, the company advertises on its website, and also at job fairs, for further specialists. ■

[www.sens-energy.com](http://www.sens-energy.com)

# Just between us,

Well I'll be damned,

What sort of year was that again?

There's one thing I've got to give the girls and boys at STEAG Power Minerals: It's never boring. What did I just read there? They've just laid their hands on 140,000 tons of stored coal slag for marketing? Well, knock me down with a feather!

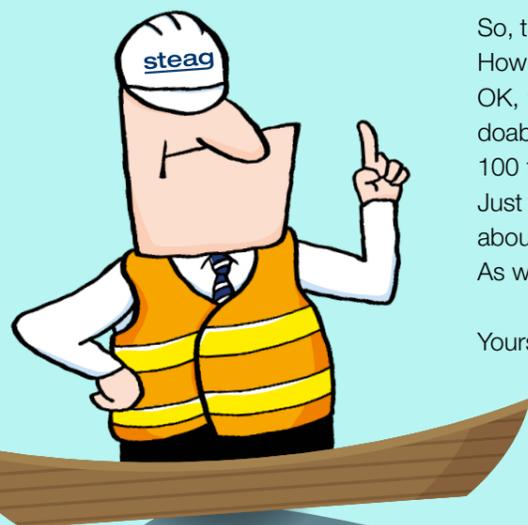
I'll just pick that apart for you. 140,000 tons. The heaviest animal in the world, the good old blue whale cow, weighs 190 tons. But you can't really imagine a blue whale straight off, can you? By comparison, a bog-standard elephant weighs a cuddly 5 – 6 tons.

So, the stock of coal slag would weigh just about as much as 736 blue whales. How on earth do they want to transport that? 736 blue whales. That's just sick! OK, taking it all to Völkingen by truck is still possible. The route's just about doable. But to Lünen? That's around 220 miles away. And they'd have to do it 100 times a week. No way. That'd be totally crap for the environment as well. Just think of the poor blue whales. But what'm I making such a song and dance about? The girls and boys at Power Minerals'll get it sorted. They're smart folk. As we've found out in the past.

Yours,

*Betonkopp*

You can find out on page 18 how STEAG Power Minerals is really going to transport the 140,000 tons to Lünen.



# Can you find the solution word...?

## Congratulations!

In the last edition we asked you to find the bugs in our picture. The correct answer was "7". The following winner was drawn from all correct entries: Silvia van Cleve! Congratulations - enjoy your Kindle Paperwhite eBook-reader!

Enter the given technical terms correctly into the grid and send the solution word to [gewinnspiel@steag.com](mailto:gewinnspiel@steag.com) under the heading „Competition“. Last date for entries: April 30, 2020.

**It's worth your while taking part: All participants who send in correct answers will be entered into a draw for „Bose® SoundLink Revolve Bluetooth speaker“.** Have fun solving the riddle and good luck in the draw.\*

**4 letters**  
SENS  
tons

**5 letters**  
Seoul

**6 letters**  
recipe  
flyash

**7 letters**  
Ensdorf  
Emsland  
ketchup  
Moldova  
Vietnam

**8 letters**  
concrete  
geometry  
refinery

**9 letters**  
guideline  
Powerment

**10 letters**  
laboratory

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7  
3  
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8  
11  
2  
9  
12

**BLOCKTRAINS**

**R**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

\* The judges' decision is final. Employees of the STEAG Power Minerals Group and their family members may not take part. By entering the competition, the participant agrees that in the event of winning, his / her name will be published in the SEGMENT magazine.



# Accredited laboratory quality

In its own construction materials and fuel laboratory, STEAG Power Minerals continuously ensures product quality and also performs tests for its subsidiaries in Germany and abroad.

At the same time, the company provides its customers with direct access to its broadly-based know-how. For example, they can use the laboratory's expertise to test the quality of their products, develop new products or concrete formulas or promote new applications for fly ash and other products.