ENVIRONMENTAL DECLARATION 2024

BADISCHE STAHLWERKE GMBH

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EMAS
GEPRÜFTES UMWELTMANAGEMENT
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Contents

1. Preface

Active protection of the environment is a fundamental challenge and one of the most important tasks for safeguarding our future standard of living. This means that from the start in the developmental stage of a product, the manufacturer must consider how it can be recycled or disposed of without harming the environment.

Yearly, world crude steel production amounts to more than 1.8 billion tons (approx. 35 million tons in Germany), one third of this is based on scrap. No other material has a similarly proven and efficient recycling system as steel. Due to its complete recyclability, steel renders closed material circuits possible. According to the statistical report „Steel Scrap Foreign Trade 2022“, approximately 84% of the steel ever produced worldwide is still in use due to longevity and recycling.

The objective of Badische Stahlwerke GmbH (BSW) in publishing this document is to provide information about its environmental activities at its Kehl location and to enter into an open dialogue with the general public. This review furnishes data for an assessment of the environmental issues and describes the company's environmental and energy policy, its targets, and the environmental and energy management system already in place. Proper operation is confirmed by regular on-site inspections by the Regional Council of Freiburg.

Managing Director
Markus Menges

2. Environmental and energy policy

Environmental policy

Steel is one of the most important materials in the world. Under ecological aspects, steel is an excellent material, as it may be used almost infinitely without any loss of quality. By-products from the production process, such as electric arc furnace slag (EAF slag), scale and also waste refractory products can be recycled. EAF slag (BEOSALT) for example is used in road construction. The complete process helps to protect natural resources.

In the course of the last few decades steel production in the electric arc furnace has developed into an efficient process. BSW has managed to develop their environmental activities in a sustainable way and will continue on this way in the future as far as possible with regard to technical and environmental aspects. The environmental policy is determined by the environmental guidelines.

The environmental guidelines are:

Management system, program and objectives

Our environmental management system, the environmental program and the objectives defined in this context aim at the safeguarding and sustainable improvement of the environmental protection. The necessary resources are provided.

Integration of the environmental management system

We ensure that the requirements of the environmental management system are firmly integrated into our business processes.

Binding commitments

Compliance with legal regulations (laws, standards and optional commitment) is our minimum standard and is compulsory for us.

Environmentally friendly production

We make sure that our products are manufactured with minimum input of resources and minimized environmental impact. It is our aim to keep the environmental influences related to steel production as low as possible and to improve the associated processes continuously.

Appearance of the plant

We attach great importance to cleanliness and order in our plants, which contributes to the positive appearance of our facility.

Motivation and qualification of staff

The training and qualification of our staff as well as our information policy aim at enhancing an environmentally conscious behaviour. The ideas management further serves for an active improvement and motivation in the field of environmental protection. The employees are obligated to keep to the legal requirements and the environmental regulations established by BSW.

Public authorities and the public

We participate in various regional task forces and thus enter into an open dialogue with the public. We attach great importance to a good cooperation with residents, associations and public authorities and approach environmental topics conjointly.

Energy policy

The energy management system (EnMS) serves to systematically record all plants and processes with significant energy consumption. It is designed to identify potential savings, to evaluate investments for improvement of energy-related performance and to implement them on this basis. The energy policy forms the basis of the energy management system and is respected in all our activities.

The energy guidelines are:

- Securing the energy supply by promoting and procuring sustainable technologies and energies
- Step-by-step transformation to climate-neutral steel production
- Compliance with legal demands and other binding obligations
- Continuous improvement of energy-related performance and the energy management system
- Procurement of energy-efficient products and services wherever possible
- Integration of the requirements of the energy management into the organisation's business processes
- Any reorganisation of processes, installations and equipment shall promote and take into account the improvement of energy-related performance
- Provide information on the status of energy targets and their fulfilment, on our energy performance indicators and other relevant information; make all relevant information available
- Definition of objectives that are consistent with energy policy and strategic orientation
- Optimisation of the consumption of resources related to energy consumption
- Training of employees on energy-relevant topics

3. The enterprise

Location

Badische Stahlwerke (BSW) currently produce approximately 2.1 million tons of rolled products with a staff of approximately 850 employees and thus belong actually to the productivity leaders worldwide. BSW is the only steel plant in Baden-Württemberg. The location in the Rhine harbour of Kehl, on a small headland with a surface of only 395,000 m² between one of the three harbour basins and the river Kinzig is still one of the decisive factors for the success of the company. Also affiliated companies, e.g. „BSW Stahl-Nebenprodukte GmbH" (BSN) are active on the factory site. The city of Kehl and the French metropolis Strasbourg are in close vicinity of BSW. The community of Auenheim is their direct neighbour in Eastern direction. The location of BSW between Kinzig and Rhein was classified by the LUBW in a flood area (HQ_{EXTREM}).

BSW is under company law of the "Südwest Beteiligungen GmbH" with registered office in 69412 Eberbach.

Waste Heat Utilisation

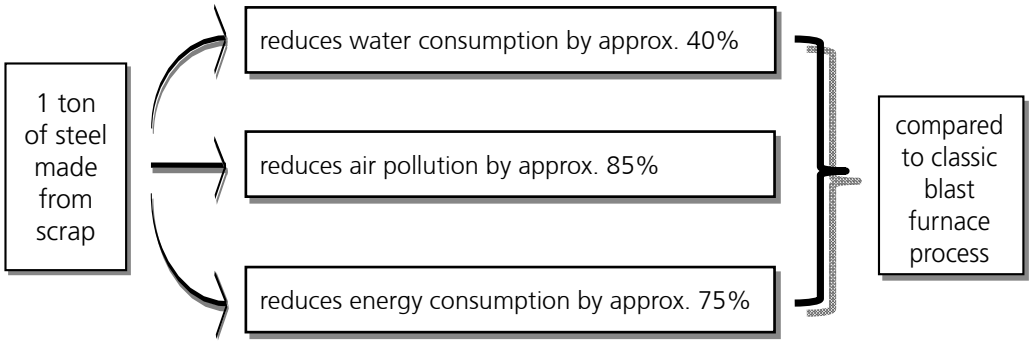
In May 2019, a declaration of intent was signed between representatives of the state government of Baden-Württemberg, the German Federal Government, the „Eurométropole de Strasbourg", the „Région Grand Est", the city of Kehl, BK Bioenergie and Badische Stahlwerke GmbH to implement a cross-border waste heat project. The aim of the project is to use the waste heat from BSW. In the meantime, a separate company has been founded for the transport and distribution of the waste heat.

Project Data:

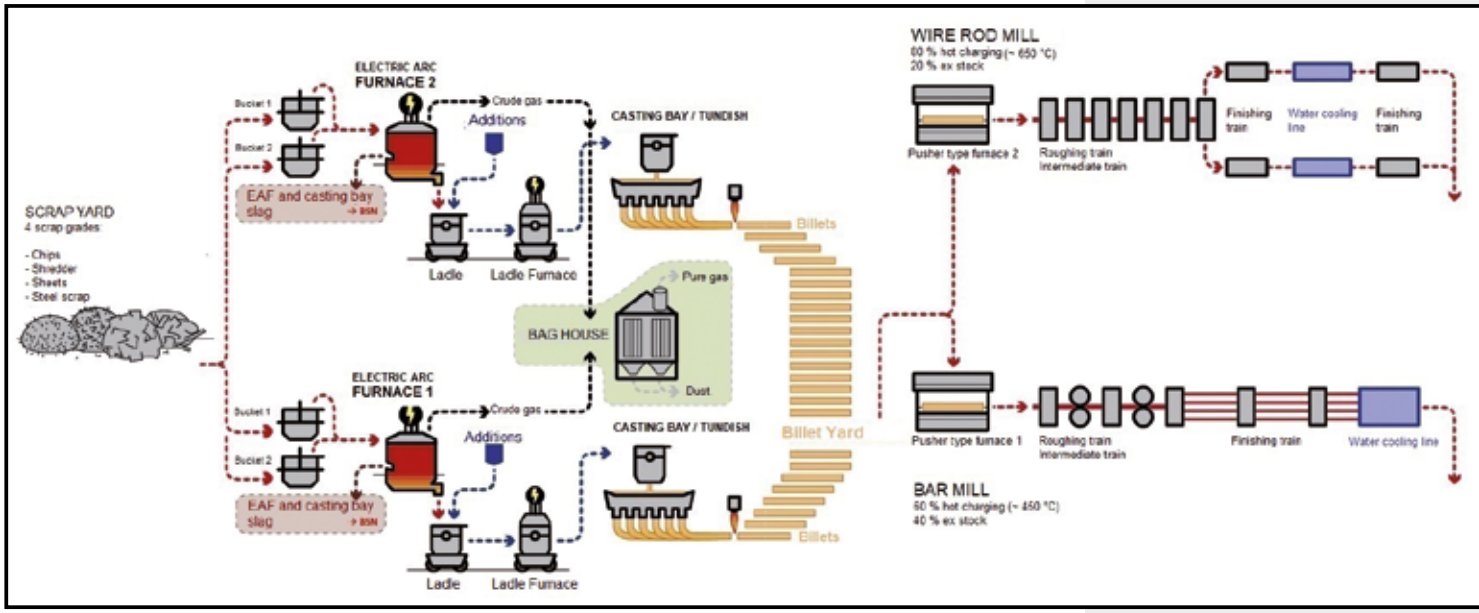
Power: 20 MW
Usable waste heat potential in the first step: 70 GWh/year
Total waste heat potential: 135 GWh/year
Households supplied with heat: > 7,000 households
CO_2 savings in the first step: 20,000 t CO_2/year
Total possible CO_2 savings: 37,000 t CO_2/year
Length of heat pipeline: 4.5 km from BSW to Strasbourg (2.6 km tunnel)
Implementation period: 2029/2030

4. From scrap to steel
- the electric steel production as a recycling process -

The use of scrap saves the natural resource of ore as well as the associated auxiliary materials and energies that are necessary for steel production in a blast furnace or a converter process route. At the same time the impact on the environment is reduced.



Electric steel mills play an important role in industrial society's materials cycle, because they produce steel from scrap metal. Charging materials for electric steel mills include scrap from vehicles (shredded scrap), demolition scrap and new scrap like sheets and turnings.



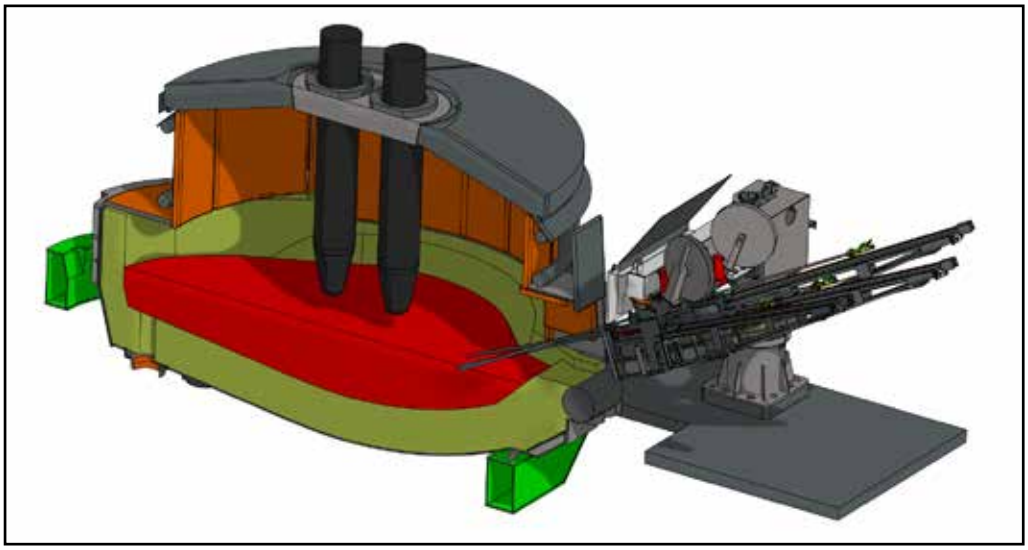
Start of steel production at the scrap yard

Scrap yard

More than 60 % of the scrap used in steel production is delivered directly by Rhine barges, the remainder coming by rail and a small percentage by truck. The quality of the scrap is continuously monitored. Overhead cranes unload up to 2.6 million tons of scrap delivered each year. The so-called scrap buckets which are loaded on scrap cars are filled with scrap by means of the gantry cranes and are then transferred to the steel plant through the two furnace bay gateways.

Electric arc furnaces

The steel plant is comprised of two AC-arc furnaces (EAFs) that melt the scrap with an arc, boosted by gas-oxygen burners. Up to 120 tons of scrap are melted per heat and the tapping weight (molten steel) is up to approx. 108 tons. The furnaces are tapped after an average tap-to-tap time of 40 minutes. Tapping temperature averages 1,580 °C.

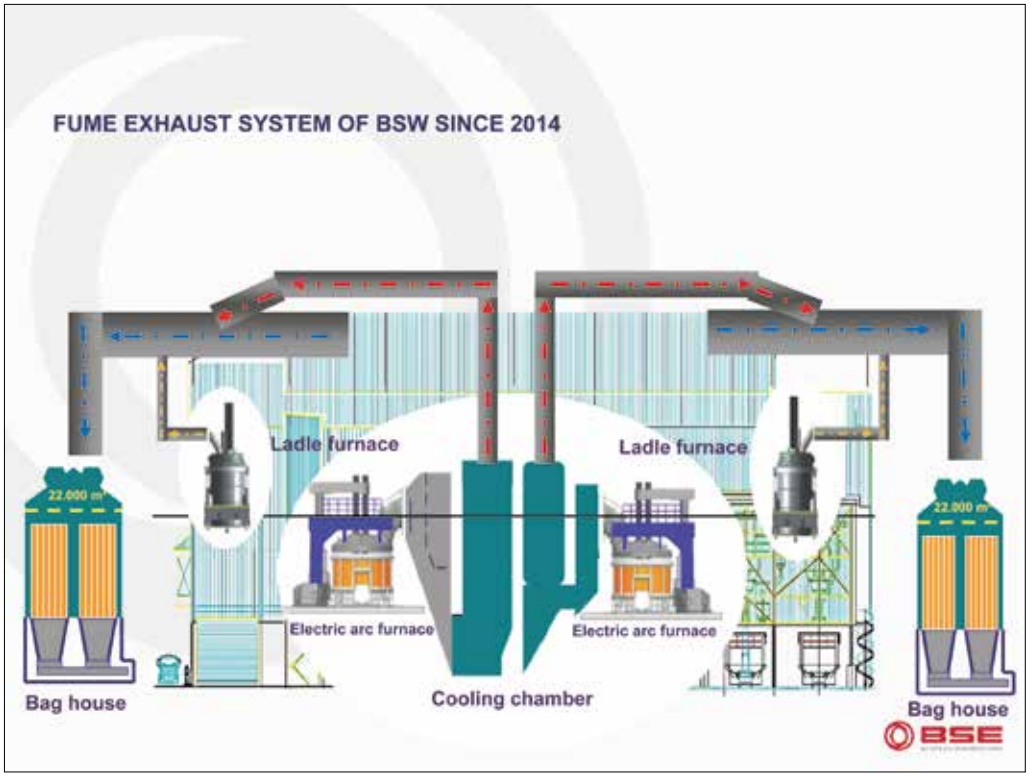


Dust collecting plant

The continuous development of energy-conserving technologies is essential for economic survival for a steel producer based in Germany, because energy costs make up approximately 40 % of controllable costs. Environmental benefits – the reduction of atmospheric, water, and noise emissions – are usually "mere" side-effects. We are nonetheless proud of the environmental protection technology which we market worldwide with our affiliated company Badische Stahl-Engineering GmbH (BSE).

Extension of the dedusting unit

The dedusting unit which has been extended in 2014 serves as an example:
The off-gases generated at the two electric arc furnaces and the ladle furnaces are evacuated by the building exhaust system with a maximum capacity of 1.8 Mio Nm^3/h and cleaned in baghouses with a filter surface of about 44,000 m^2. Dioxins and Furans are reduced before the filter in a post-combustion chamber with a subsequent HTQ system to a value below 0.1 ng TE/Nm^3. The off-gases of the ladle preheaters and the gunning stations are fed into the additional dedusting unit and are thus cleaned in a better way. Due to the restructuring of the off-gas streams dioxin-containing and dioxin-free streams are separated.



Central alloying plant

When steel is produced from scrap, fluxes and alloys have to be added to obtain the required grades.
At BSW the fluxes and alloys are delivered to the alloy storing silos unit by truck where they are unloaded through a funnel and transported to a hopper plant on a conveyor system. The materials needed for production are collected from the hopper with the help of weighing equipment and transported to the furnaces via conveyor belts and chutes.

Explanations

ng: nanogram: 1 ng = 10^{-9} g corresponds to one billionth of a gram

TE: Toxicity equivalents: all dioxins and furans are valued with factors ranging from 0.001 to 1, depending on their toxicity, and are represented as a sum

Nm^3: Standard cubic meter: to be able to compare gas volumes they are represented in a standard state (0 °C and 1,013 bar)

Ladle furnaces

While the electric arc furnaces melt the scrap as quickly as possible, the alloys are added in the ladle furnace based on the chemical analysis of the steel and the temperature is adjusted to the correct level. The steel stays in the ladle furnace for approximately 20 minutes, after which the ladle is traversed by crane to the continuous casters.

Continuous casting plant

At the continuous casting plant, the molten steel is poured from the ladle into a tundish (a tub-like vessel) with six nozzles, through which it runs into a 1,000 mm long copper mold. A lifting table oscillates the molds while the molten steel is water-cooled until billets are formed (14 m in length, various quadratic cross sections). Casting speed depends on the capacity of the cooling system. The billets are then transported to the rolling mills by the means of the crane units.

Pusher-type furnaces

The billets are reheated in pusher-type furnaces fuelled with natural gas which are located upstream of the two rolling mills. This process is computer controlled. Before the billets, produced by the two continuous casters, can be heated to rolling temperature in the pusher furnace, a chemical analysis is performed on them. The results determine how the billets are to be used.

Bar mill (rolling mill I)

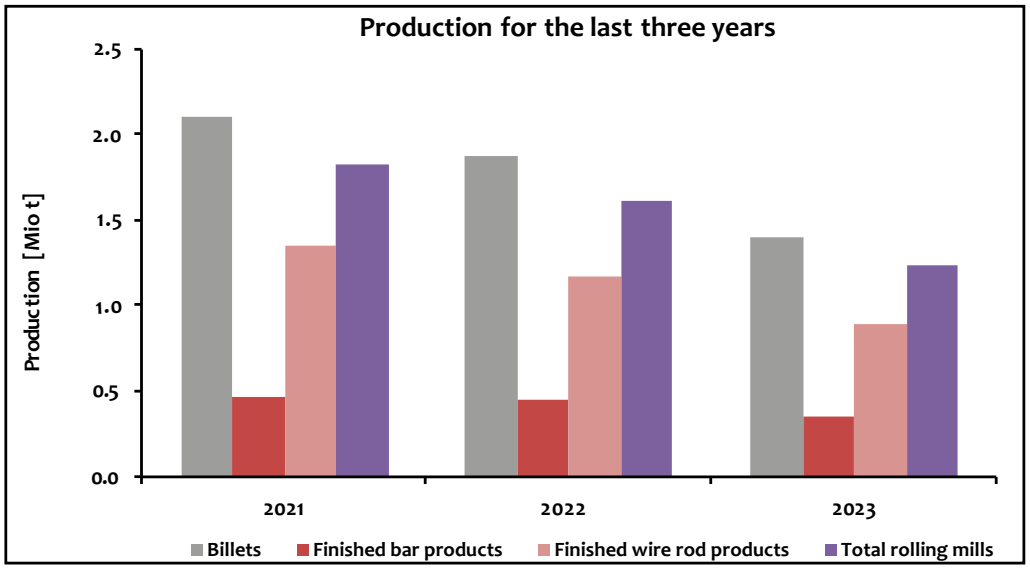
In the bar mill the billets are rolled into a ribbed rebar with different diameter and a customized length. The bars are strapped into bundles weighing around 2.5 tons ready for shipping. The different dimensions are produced by slit rolling, in which a billet is divided into two, three or four final cross-sections simultaneously. An average of 100 tons of finished steel products are rolled per hour.

Wire rod mill (rolling mill II)

The two-strand wire rod mill produces plain wire rod as well as ribbed reinforcing bars in different diameter. The wire rod mill consists of a roughing, intermediate and finishing train. After the finishing train the wire is cooled down in the primary water cooling line and forwarded to the laying head. In the laying head the wire is laid in windings and disposed on a roller table which at the same fulfils the function of a secondary air cooling line. The end of the roller table already belongs to the wire adjustment. The wire drops through an opening and will be gathered as a coil with a total weight of 1.8 t. The wire is then forwarded with a hook conveyer to the coil tying machine.

Production data steel plant and rolling mills (all figures in million tons (MT)/year)

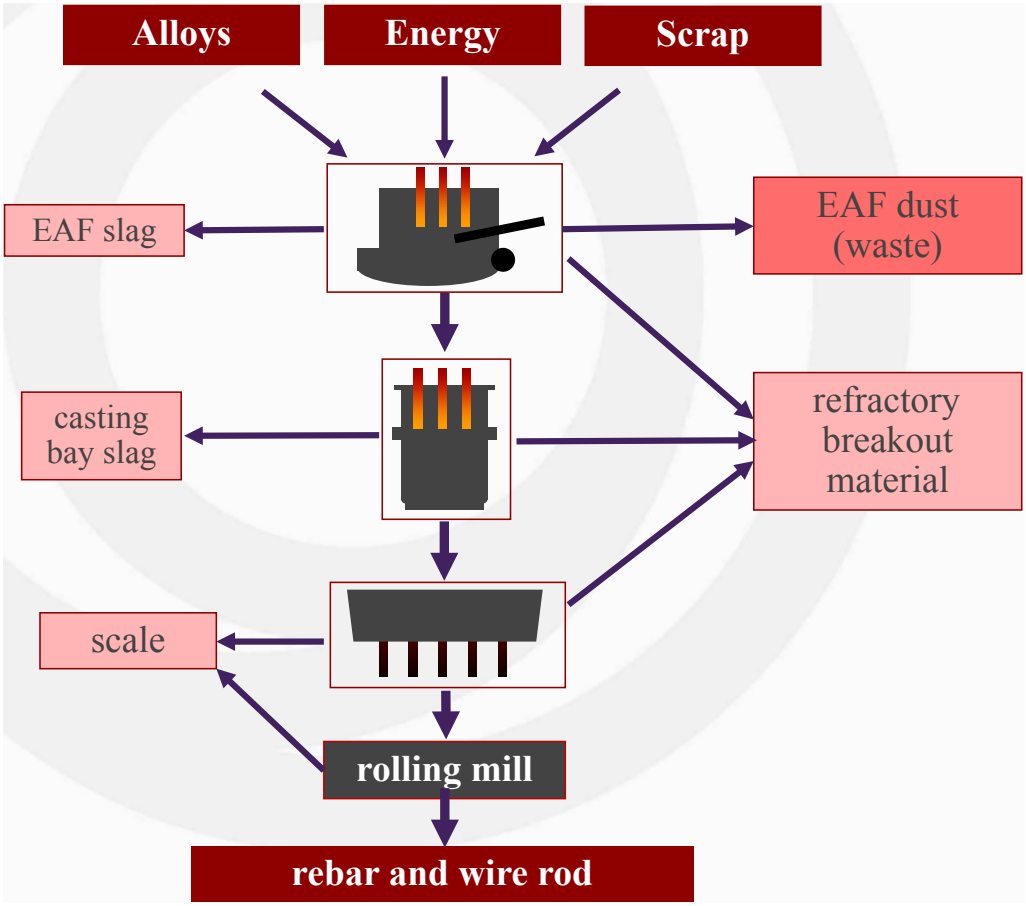
Production	2021	2022	2023
Billets (MT)	2.106	1.876	1.408
Finished bar products (MT)	0.472	0.444	0.351
Finished wire rod products (MT)	1.579	1.173	0.890
Total rolling mills (MT)	2.051	1.617	1.242



Some of the billets produced are processed into wire in other wire rod mills. In addition, production-related losses in the rolling mill (return scrap from the shearing plants and scale) contribute to the difference between steel mill and rolling mill production.

Recycling at steel and rolling mills

During the steel production process, EAF slag, casting bay slag and scale are generated as by-product. The refractory break out material will be recycled and can be returned again to the production process. In terms of the closed loop recycling management EAF dust is disposed as waste.



Refractory breakout material

The steel vessels of electric arc furnaces, ladles and tundishes are lined with refractory materials to protect them from the molten steel.

The refractory material has to be renewed at regular intervals. The breakout material is processed in a screening plant and some of it is reused by BSW. The remaining material is sold to the producers of refractories who process it into refractories for use in steel mills, completing the recycling process.

Internal scrap

Internal scrap consists of reinforcing steel only. It is generated in the continuous casters as shrink heads, ladle and tundish skulls, and in the rolling mills as shearing waste, cobbles and scrap bundles. Before being charged into the electric arc furnace some of the internal scrap has to be cut into furnace sizes in the torch cutting area.

Electric arc furnace slag (EAF slag)

120 - 150 kg of furnace slag, a fused rock material very similar to natural rock, is generated with each ton of steel produced by BSW. The main components of this slag are natural compounds like iron (as oxide), unhydrated lime, sand and oxides of magnesium, manganese and aluminum.

Mechanical processing into high-standard road construction and hydraulic engineering materials takes place in an external slag treatment plant. The final products, similar to processed gravel, with different granulations which are monitored by an independent scientific institute. Only approved and quality-tested material is delivered to customers.

Depending on its grain size the processed slag named BEOSALT can be used for various purposes:

- Road construction
- Hydraulic engineering
- Construction of parking lots
- Rail construction
- Decorative areas

BEOSALT serves as an alternative construction material to gravel, thus conserving natural resources.

Casting bay slag

The casting bay slag is also processed in an external plant. Under the name BEOSIL it is mainly used for dirt road construction.

- Road construction material
- Bituminous surfacing
- Fillings
- Landfill

Filter dust

In all steelmaking processes, wastes in the form of dust are generated in the de-dusting plants. The dust is extracted by the direct suction and bay suction systems and conducted to the filter baghouse where the dust-loaded crude gas is cleaned via filter bags. The dust load in the crude gas is up to 4 g/Nm³. The clean gas side of the baghouse shows a residue of under 1 mg/Nm³ (limiting value 4 mg/Nm³) on average per year, which is equivalent to a separation degree of over 99.9 %.

Explanation

ASN = waste code number according to waste catalogue directive. That is used as description of waste and the classification for the required special supervision.

The dust contains elements that evaporate at high temperatures during melting and condense again when the gases cool. These include zinc and lead as well as minute quantities of dioxins and furans. The dust (hazardous waste, ASN 100207*) is supplied to authorized plants which recover elements such as zinc. These plants are audited and verified regularly by us.

Principal components of dust:

o	Iron oxide (Fe_2O_3)	approx. 30 %
o	Zinc (Zn)	approx. 25 %
o	Calcium oxide (CaO)	approx. 5 %
o	Anorganic chloride compounds (Cl)	approx. 2 %
o	Lead (Pb)	approx. 2 %

Mill and continuous casting scale

Scale consists mainly of iron oxide and forms on the hot steel surface. It is severed from the steel by mechanical stress and contact with cooling water. Scale particles fall into the cooling water and are deposited in worm classifiers, laminar separators, hydro cyclones, sedimentation tanks and sand filters. The scale generated in the continuous casters and the rolling mills is processed to briquettes in external plants and used in blast furnaces for pig iron production. Here also, the material flow loop is closed. For protection of resources the scale is used as substitute material for iron ore in the cement industry.

5. Environmental and energy aspects and key indicators

5.1 Environmental aspects

According to EMAS all activities, products and services must be audited from the point of view of their effects on the environment. Based on the results of the audit, it must be decided which effects have the greatest impact on the environment and how they can be controlled or improved.

Direct environmental aspects are related to activities controlled by the company. The aspects considered to be „essential" are as follows:

1 Generation of waste (industrial waste and hazardous waste, see chapter 5.3.4)
2 Waste water (sewage disposal and generation, see chapter 5.3.3)
3 Climate relevant gases (CO_2 generation, see chapter 5.3.5)
4 Energy (energy aspects, see chapter 5.2 and energy efficiency, see chapter 5.3.1)
5 Noise (generation by equipment, vehicles, monitoring via noise measurement, see chapter 5.4)
6 Air emissions (dust, NO_x, CO, see chapter 5.3.5)
7 Water (well water and public water consumption, see chapter 5.3.3)
8 Biological diversity (area shares, see chapter 5.3.6)

Indirect environmental aspects can comprise activities, products and services which the company may possibly not be able to control completely. Indirect environmental aspects are:

Hazardous materials transportation (hazardous waste disposal and supplies)
Hazardous materials transportations are transports of waste material like e.g. waste oil, paint and acids, but it can also mean supplies of diesel fuel and other operating materials. Collection and deliveries are controlled by the risk prevention officer. We only employ special waste management companies or companies with the respective qualification for hazardous material transportation.

Suppliers and contractors
Suppliers and service providers are informed about the energy and environmental management system of BSW. The purchasing guidelines include environmentally and energy relevant topics. Environmental protection is a key criterion for the evaluation of suppliers. Contractors working on the company site apply the same environmental standards as BSW.

Recyclability of products (steel products) and by-products (slag, refractories)

In terms of the closed loop recycling management the steel products manufactured by BSW can be reused by 100 % as starting material for steel production after their use. All by-products generated are recirculated or used as environment-friendly material in the production process.

Traffic volume (external)

Scrap delivery and finished products shipment are mainly realized by barge or railway. As far as possible, the same barges are also used for shipping the finished products.

5.2 Energy aspects

Energy aspects are all activities, products and services having an influence on the energy utilization and energy consumption. The main energy aspects are determined on the basis of current and former data. An energy aspect is regarded to be essential if it has a high portion of the total energy consumption and has a potential regarding

- o more efficient energy utilization
- o increased use of local renewable energies

The main energy aspects (main consumers of the respective energy carrier) are as follows:

Current

Area	Process / activity	Organisational unit
Electric arc furnaces	Melt-down of scrap	Steel plant
Rolling mills	Rolling of billets in the rolling mills	Rolling mill
Ventilation dedusting	Air pollution prevention	Steel plant
Ladle furnaces	Treatment of the molten steel	Steel plant
Compressor units	Generation compressed air	BSW

Natural gas

Area / Unit	Process / activity	Organisational unit
Pusher furnaces	Heating of billets	Rolling mill
EAF burners	Melting of scrap	Steel plant
Refractory shop / relining of refractory material	Drying / Heating / Holding	Steel plant

Carbon

Area	Process / activity	Organisational unit
Steel plant	Melting of scrap	Steel plant

Diesel

Area	Process / activity	Organisational unit
Dispatch	e.g. product handling	Dispatch
Steel plant	Slag and scrap transport	Steel plant

5.3 Key indicators

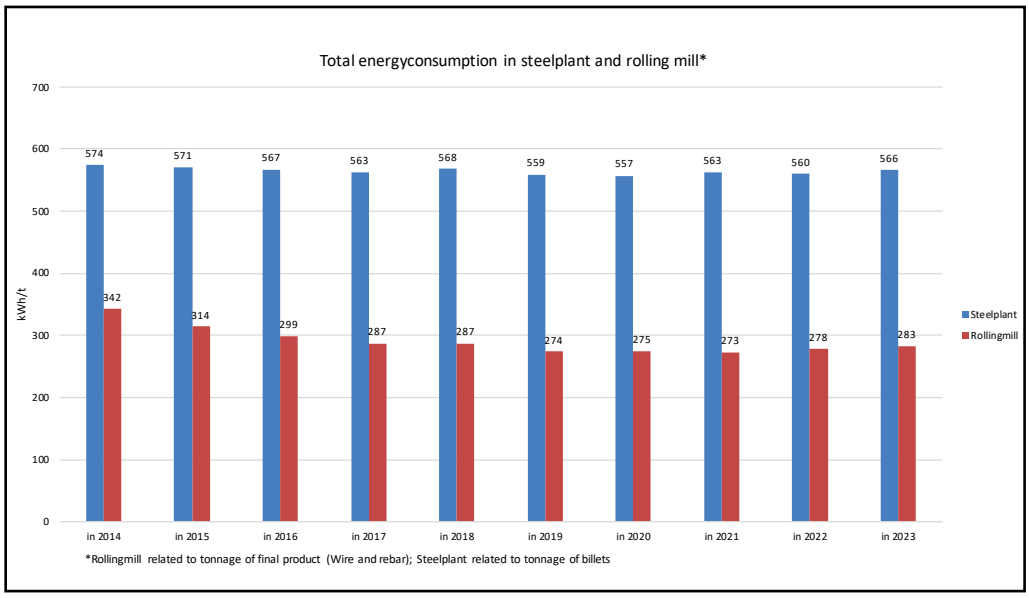
The improvement of the environmental quality is the concern to which BSW direct their environmental management system. This is the reason why in the previous BSW environmental declarations data regarding vital environmental aspects like consumption of energy and resources, waste volume and emissions were presented. Since the implementation of EMAS III these main aspects (key indicators) are made concrete in key performance indicators. This allows a uniform and clear presentation of our environmental performance. Reference parameters (production capacity, billets or finished products in tons) are provided to be able to reasonably compare improvements or trends over a longer period. The key indicators are summarized in the following table and presented and explained in the subsequent chapters. In 2023, the procurement of raw material and energy turned problematic. The boundary conditions were difficult, so the scrap mixture and the way production was run had to be adjusted.

Key indicators	Effect
Energy efficiency	Total annual consumption in kWh/t and share of renewable energy
Material efficiency	Total annual consumption of input materials in kg/t
Water/waste water	Annual well and waste water volume in m^3/t
Waste	Annual waste volume in kg/t (billets) Division into industrial and hazardous waste
Emissions	Total annual volume of greenhouse gas (CO_2) in kg/t Total annual volume of carbon monoxide in kg/t Total annual volume of dust and NO_X in g/t
Biological diversity	Percentage of semi-natural areas in relation to total area

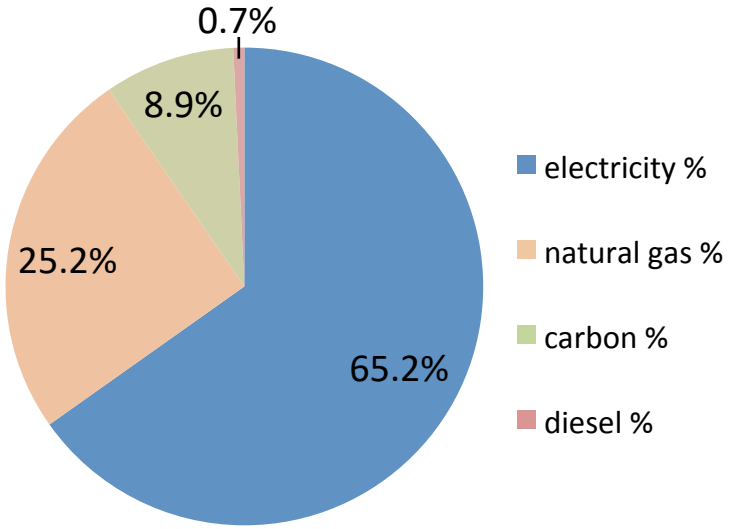
5.3.1 Energy efficiency

BSW has achieved a world class high standard in the steelmaking process from the melt shop to the rolling mill. In the past, several procedural improvements have been implemented which lead to considerable energy savings for example in the field of electric steel making. While the energy saving potentials in the field of steelmaking are rather limited today due to physical basic conditions, there are still further potentials for savings in other steel treatment areas like for example infrastructure, maintenance, supply and disposal as well as administration. At the beginning of 2011 we have therefore implemented an energy management system according to DIN EN ISO 16001 (today DIN EN ISO 50001) for the entire company in order to reveal possible potentials for savings in the different areas.

Until the year 2013 the energy consumption was indicated as one key figure for the whole plant. Due to the difference in production quantities of the steel plant and the rolling mills we will show their specific energy consumptions separately starting from 2014.



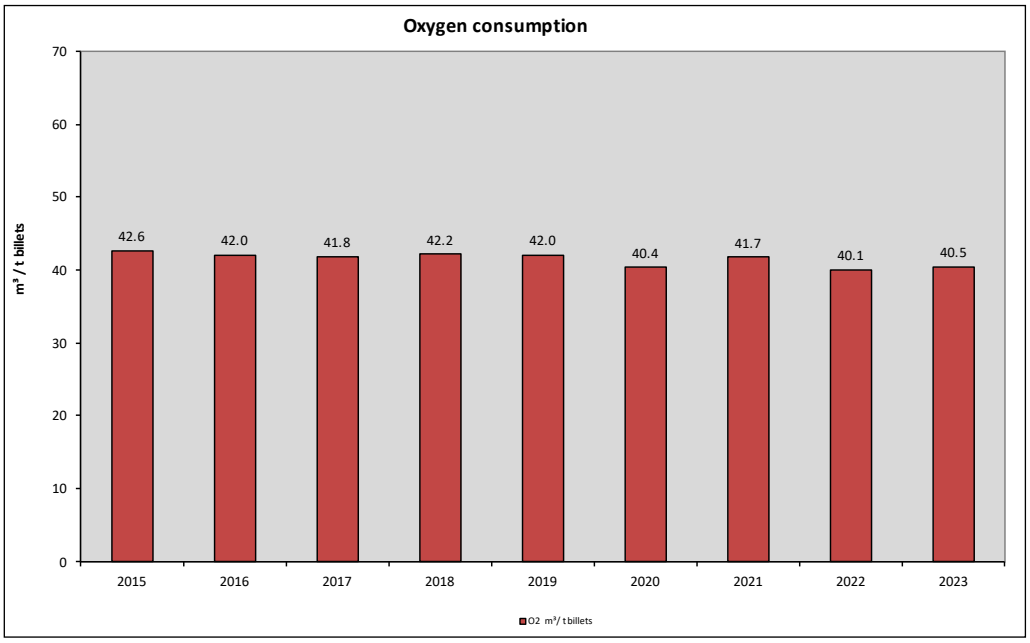
Energy distribution 2023



The energy carriers at BSW are electrical energy, natural gas, coal and diesel fuel. The percentage of renewable energies (according to EEG) from externally sourced electricity in 2023 was 3.6 % according to suppliers' statement. Carbon is mainly used for the generation of foaming slag but will also be considered.

Oxygen consumption

Oxygen accelerates the meltdown process and CO post-combustion in electric arc furnaces. It is also needed for metallurgical purposes. Thanks to technological enhancements and metallurgical improvements, BSW keeps energy consumption at optimum process engineering levels. The generation of liquid oxygen is very energy-intensive, savings in oxygen consumption mean at the same time energy savings.

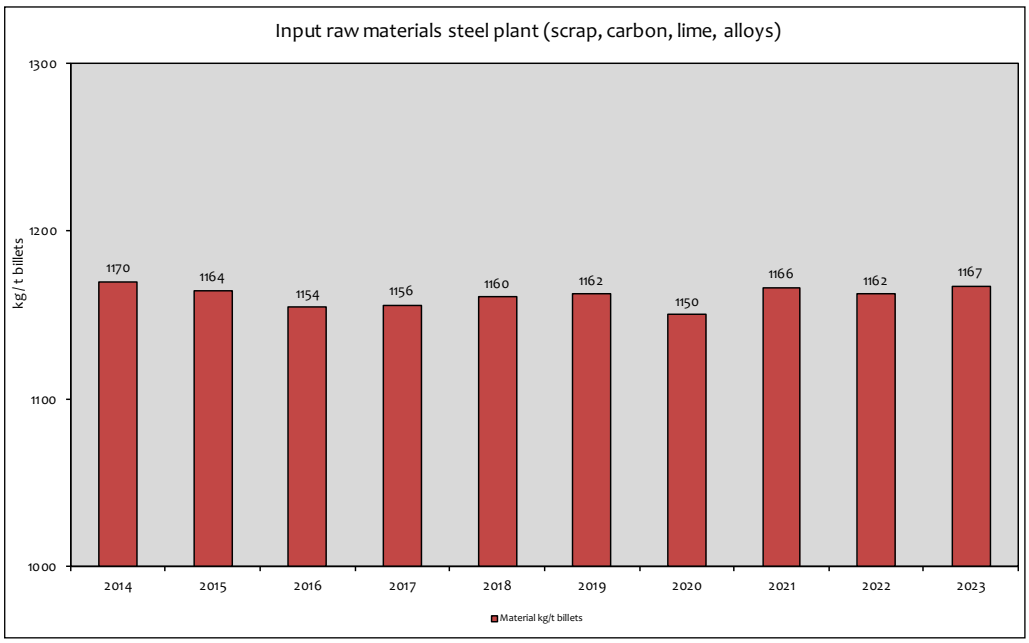


In 2021, oxygen consumption was slightly higher than in the previous year due to changed boundary conditions, a changed scrap mix and the resulting adjustment in operation mode.

5.3.2 Material efficiency

The main raw material required for steel production is scrap and due to the nearly closed raw material cycle precious resources are preserved in this way. In addition, carbon, lime and different alloys are required. When buying raw materials and supplies BSW always makes sure that they conform to its environmental policies. Purchasing guidelines were therefore extended to include certain environmental aspects. Environmental protection is also an important criterion for the evaluation of suppliers and their products. Environmental considerations and safety criteria form part of the evaluation and selection process because materials that can be detrimental to the environment, if improperly used, often require special precautionary measures. The main raw materials required for steel production are scrap, carbon, lime and various alloys.

In 2021, the specific raw material input was slightly higher than in the previous year due to changed boundary conditions, a changed scrap mix and the resulting adjustment in operation mode.



5.3.3 Waste water and well water

During the past years the productivity of the BSW has constantly increased which caused a new production permission of 2.2 million tons/year in 2003.

Under the given constraints of increased production while maintaining the authorized water quantities the water management became more and more difficult. Therefore in the year 2010 a first extension of the water industry was realized in consultation with the Regional Council Freiburg. In parallel with this measure BSW applied for a further increase of production to 2.8 million tons/year. This application was allowed and also referred to the expansion of our wire rod mill.

Expansion wire rod mill (Rolling mill II)

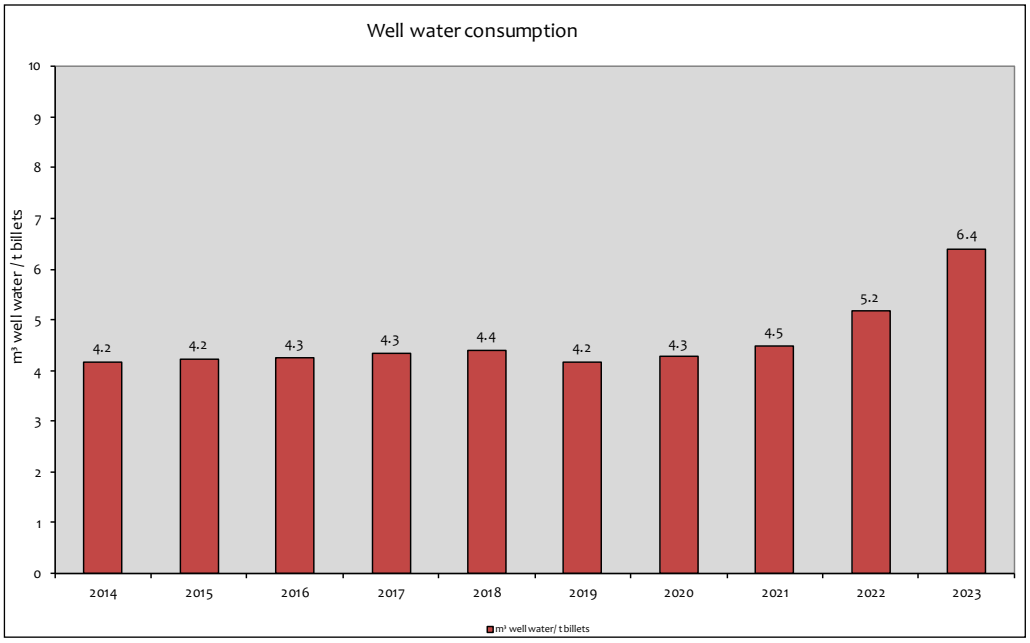
The expansion of the wire rod mill was planned and realized during the years 2010 to 2013. The start-up took place in February 2014. Thanks to this investment BSW has increased the productivity and at the same time has changed the rolling technology in order to produce the required qualities by means of the thermo mechanic rolling process. This rolling process has the advantage that considerably less micro alloys are required for the steel production and therefore the energy consumed for the production process is reduced. For ecological reasons a reduction of micro alloys is advisable, because the extraction of these raw materials is a problematic process.

The thermo mechanic rolling, however, requires significantly larger cooling circuits. The cooling water requirement for this technology is approximately 2.5 times higher. In accordance with the Regional Council we endeavored to consider the allowed fresh and waste water quantities in regard to this reconstruction. Since the start-up of the reconstructed rolling mill the rate of used well water to required cooling water has increased from a factor of 1:11 in 2010 to a factor of 1:28 in 2014.

Economical use

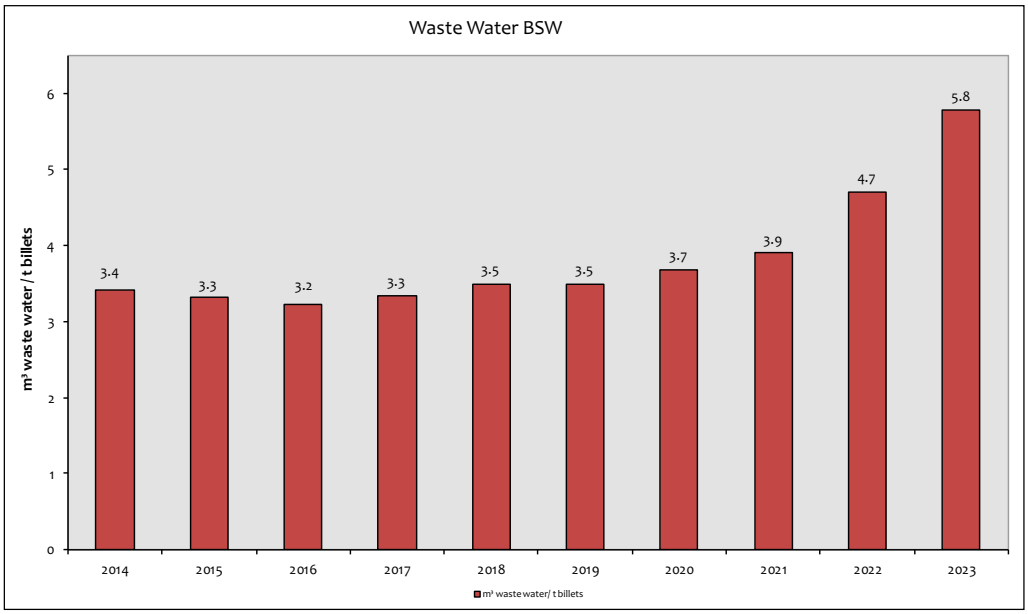
As mentioned above it was necessary to change the water management concept of BSW fundamentally. The present concept agreed upon with the Regional Council Freiburg is based on a very economical and efficient use of the ground water. Currently ground water is mainly to compensate evaporation losses and to avoid excessive concentration and salting of the circuits.

With this solution which required investments in the double digit millions also in the water management, we have a process perfectly adapting to the new production-related requirements and ensuring an economical and efficient use of the ground water.



The used ground water is taken from deep wells on the factory premises and serves for various cooling purposes.

Production and rain water are collected in one collection system at BSW. The waste water quantity depends on the rain water quantity and is thus subject to annual deviations. In 2022, the specific fresh water demand has increased due to longer shutdown phases and turndown. During the shutdowns, some of the plants still had to be cooled with water.



In 2022, the specific waste water volume was higher than in the previous year. The amount of fresh water has increased.
To meet these regulations we continuously take the following action:

- Obtain license to operate as a specialized plant as per, Water Resources Law
- Provide training in handling water-contaminating substances
- Establish a working committee for water protection
- List all potentially water-contaminating equipment
- Permanent supervision of the drain trays
- Ensure that contractors working on site observe regulations

We are direct discharger and we meet all approved limit values.

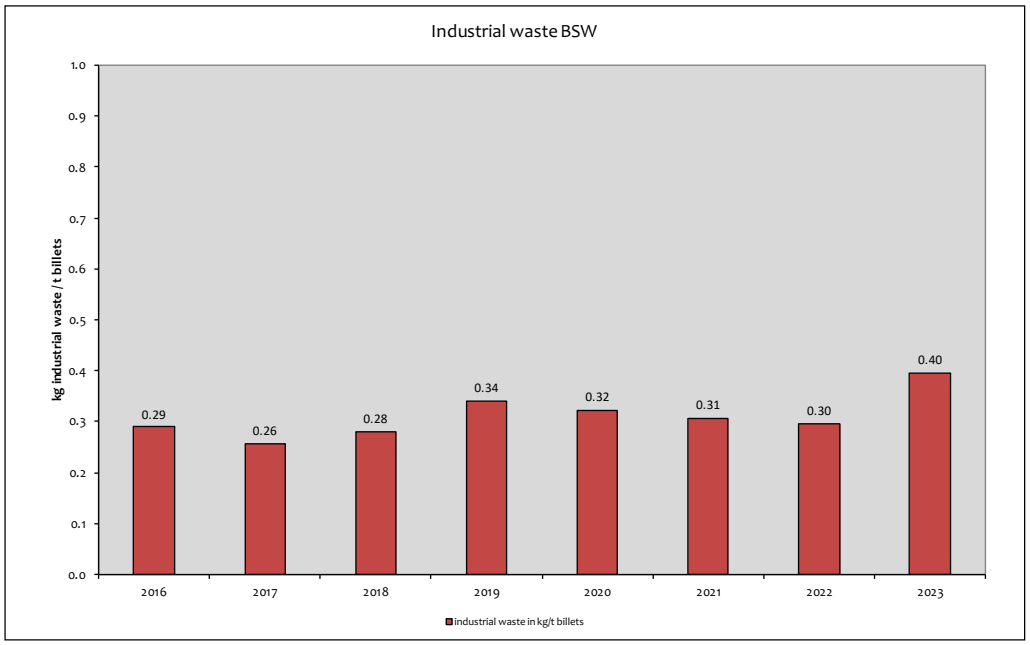
5.3.4 Waste

BSW commit to returning the waste materials generated during production to the production process in terms of the five step principle of the German Closed Substance Cycle Waste Management. Waste like packaging material is collected and separated on site before being passed on for recycling. Non-recyclable components are passed on to the district authorities in accordance with the waste handling by-laws. Waste requiring special monitoring is handed over for recycling or disposal after obtaining the necessary approval.

Metals for recycling
Metals accruing for reutilization at BSW are for example copper cables, old motors and brass.

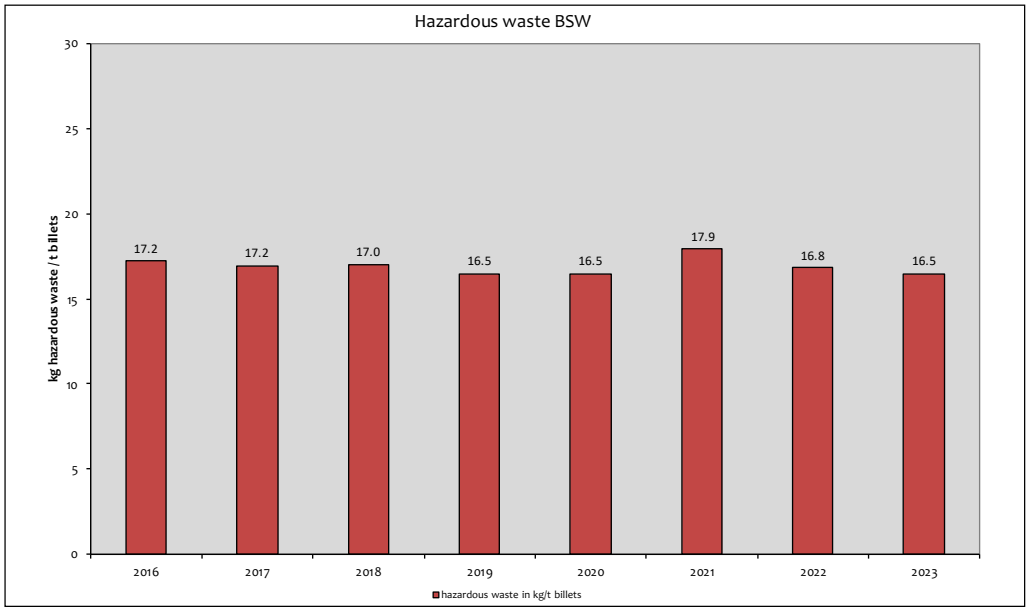
Industrial waste

Basically mixed waste, foil, wood, paper, plastics and packaging waste accrue at BSW. BSW assigns the required waste disposal only to specialized waste management facilities or EMAS certified companies; this is also valid for hazardous waste. Small companies without any certification are audited and verified by us.



Hazardous waste

The above mentioned dusts accruing in the de-dusting system represent the largest part of the hazardous wastes. The other hazardous wastes arising at BSW are mostly non-chlorinated, PCB free hydraulic and machine oils, washing water and old cleaning rags. They are used for material recycling or energy recovery by the waste management enterprises. Small quantities of hazardous waste like for example acids or bases are disposed of.



Waste statistic 2015 - 2023

	Industrial waste (t)
2015	750
2016	687
2017	574
2018	596
2019	679
2020	692
2021	644
2022	557
2023	557

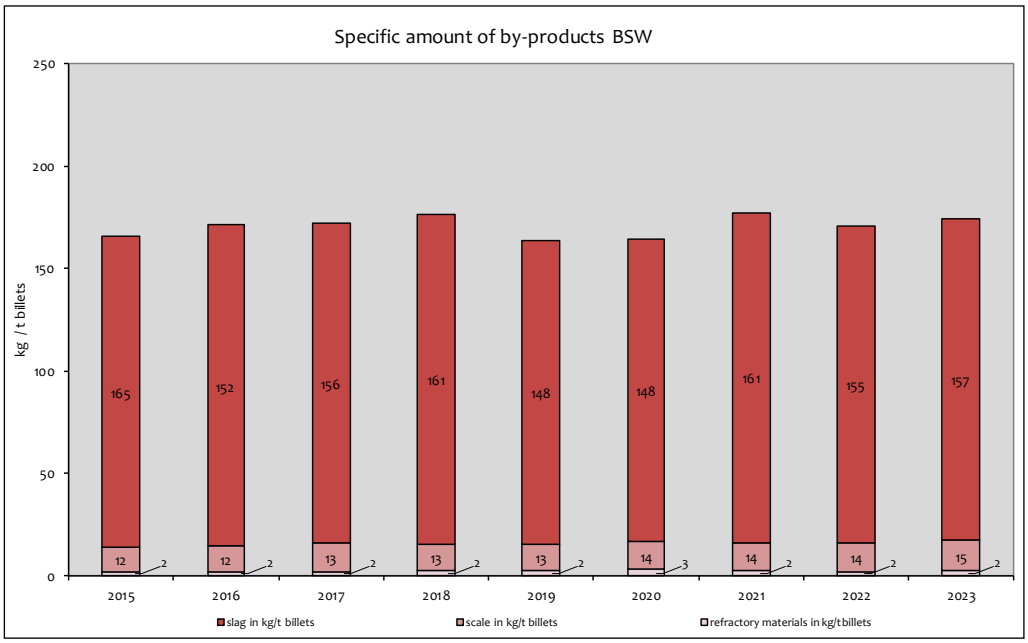
	Hazardous waste (t)*
2015	37,954
2016	40,818
2017	37,991
2018	36,211
2019	32,807
2020	35,395
2021	37,721
2022	31,562
2023	23,201

* The largest percentage is filter dust (ASN 100207*, recycling of Zinc)

Filter dust and steel plant production are in direct causal dependence on each other.

By-Products

BSW has developed certain procedures and quality requirements and has thus created the possibility to market some by-products. Those by-products are slags, scale and refractory materials. The specific electric arc furnace slag amount depends on the available scrap quality and climatic influences and is thus subject to fluctuations.



5.3.5 Emissions

Dioxin and furan emissions

A BREF document published in March 2013 cites BSW as a reference for state-of-the art technology (BREF = Best Available Techniques Reference Document on the Production of Iron and Steel).

The development and installation of technology that significantly reduces the generation of dioxins and furans during scrap melting is one of BSW's prime achievements.

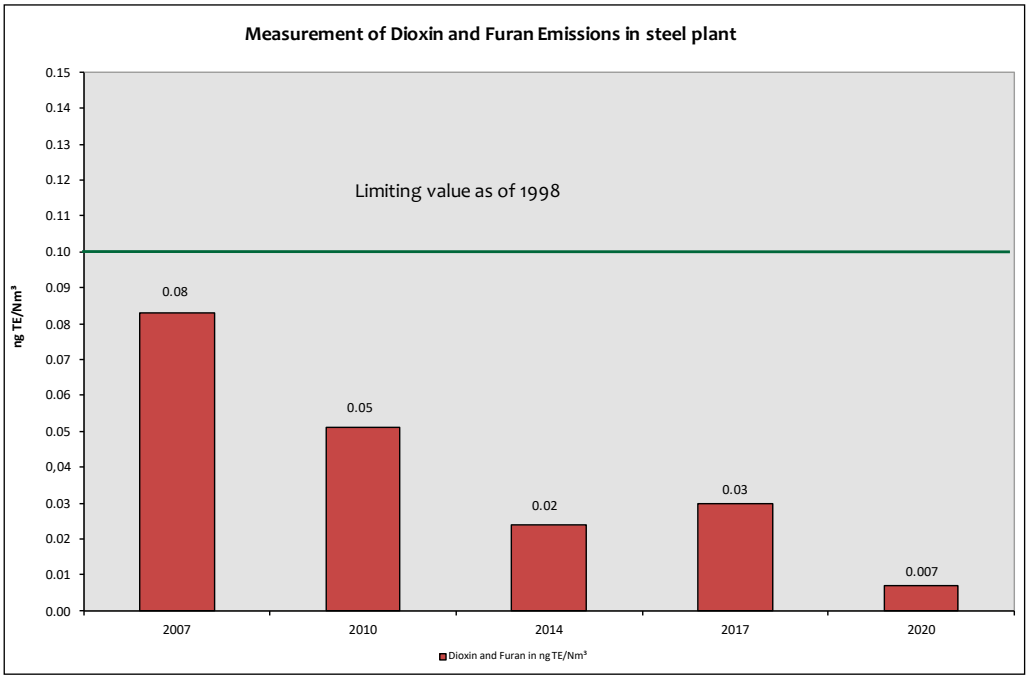
During the melt down process in the electric arc furnace, gases and dust containing dioxins are generated. Dioxins and furans disintegrate at temperatures of more than 700 °C. As the melt has a temperature of more than 1,600 °C all dioxins and furans have disintegrated. In order to avoid regeneration during normal cooling down (de novo synthesis) the off-gases are shock-cooled by quenching.

A major problem with dust removing plants is burn holes in filter bags. BSW has taken threefold precautions to ensure that its dust collecting facility operates safely and effectively:

1. The gas is moist after being quenched with a mixture of air and water, so sparks rarely fly right up to the filter bags.
2. The filter tubes are made of spark-restraining material, thus avoiding or at least reducing the risk of burn holes caused by sparks.
3. The dust removing plant is continuously monitored so any problems, even smallest holes in a filter bag, are immediately detected and the filter section affected is closed off. This does not adversely impact the plant's dust extraction performance because the system has around 15 % surplus capacity (a filter section corresponds to about 3 % of the area).

In the field of electric steel plants BSW complies with the „Best Available Techniques (BAT)" and is mentioned several times in the so-called BREF-Papers Best Available Techniques (BAT) Reference Document for Iron and Steel Production (Status 2013). In other words we have our processes under control and produce steel with a minimum of emissions, especially dioxins.

The following graphic illustrates the success of our efforts:



Explanations

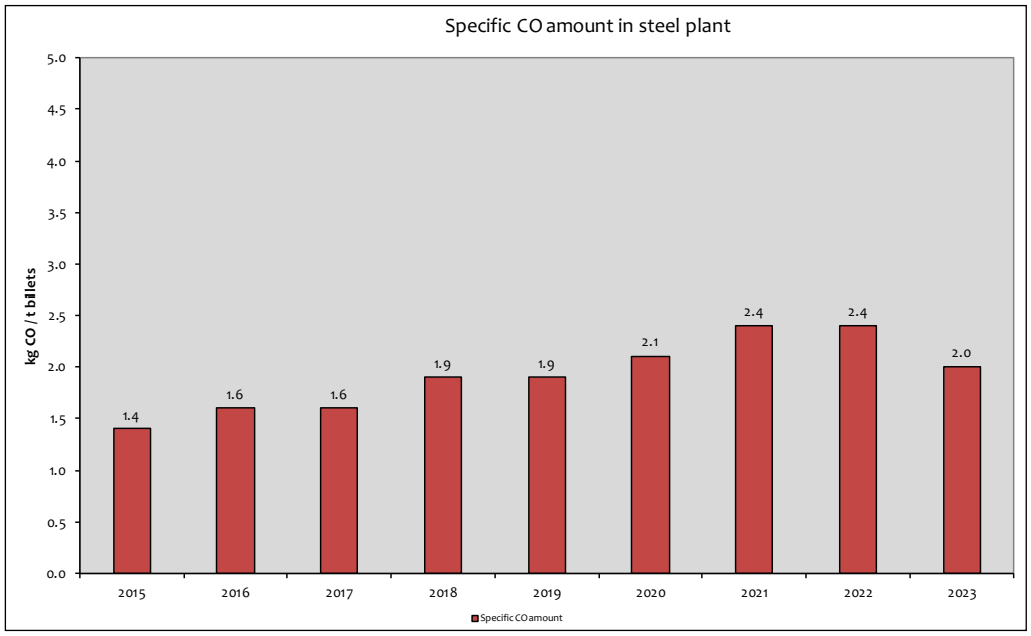
ng: nanogram: 1 ng = 10^{-9} g corresponds to one billionth of a gram

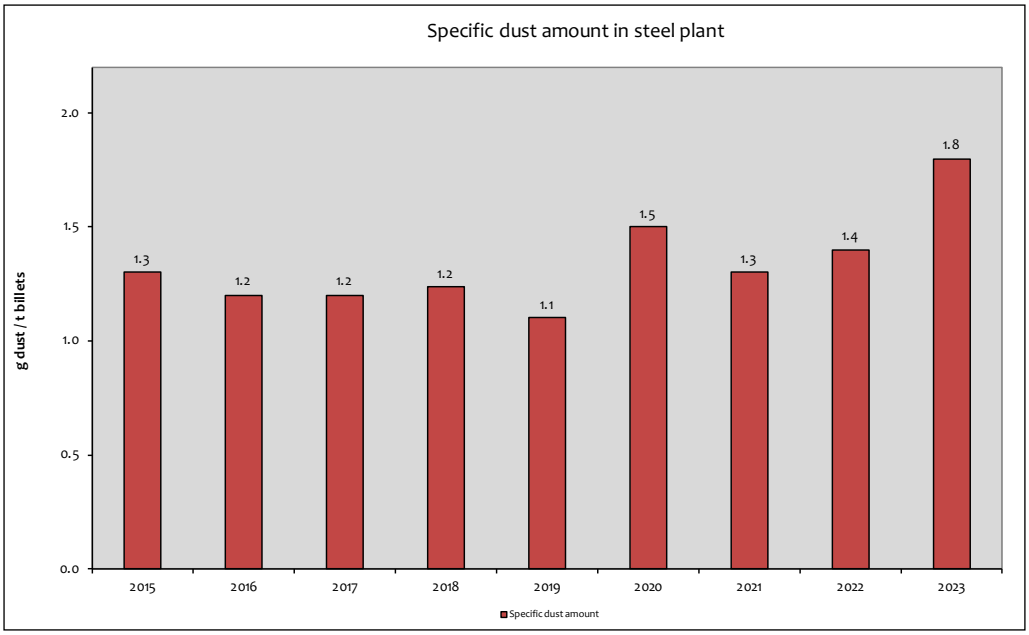
TE: Toxicity equivalents: all dioxins and furans are valued with factors ranging from 0.001 to 1, depending on their toxicity, and are represented as a sum

Nm^3: Standard cubic meter: to be able to compare gas volumes they are represented in a standard state (0 °C and 1.013 bar)

Carbon monoxide and dust emission in the steel plant

The limit value for carbon monoxide in the steel plant is 600 mg/standard cubic meter, which we undercut by about 50 %. The limit value for dust emissions in the steel plant is 4 mg/standard cubic meter, and we have been well below 1 mg/standard cubic meter for years. The specific values fluctuate depending on production. In 2018, already, there was a slight increase in CO emissions. We complied with all limits at all times. Nevertheless, we will install a flap control in the exhaust system to reduce the peaks in CO emissions.

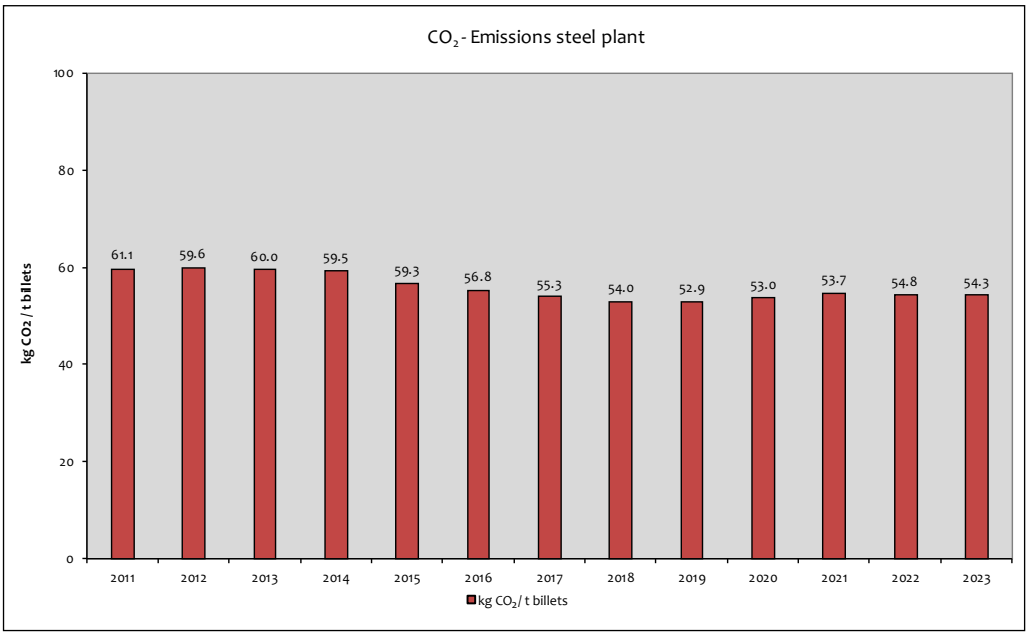




Emissions as per the greenhouse gas emission trading act

BSW is liable to emission trading. The CO_2 emissions are calculated on the basis of a balancing of the in- and output of carbonic materials, i.e. only directly generated emissions (electric current is not considered in this context).

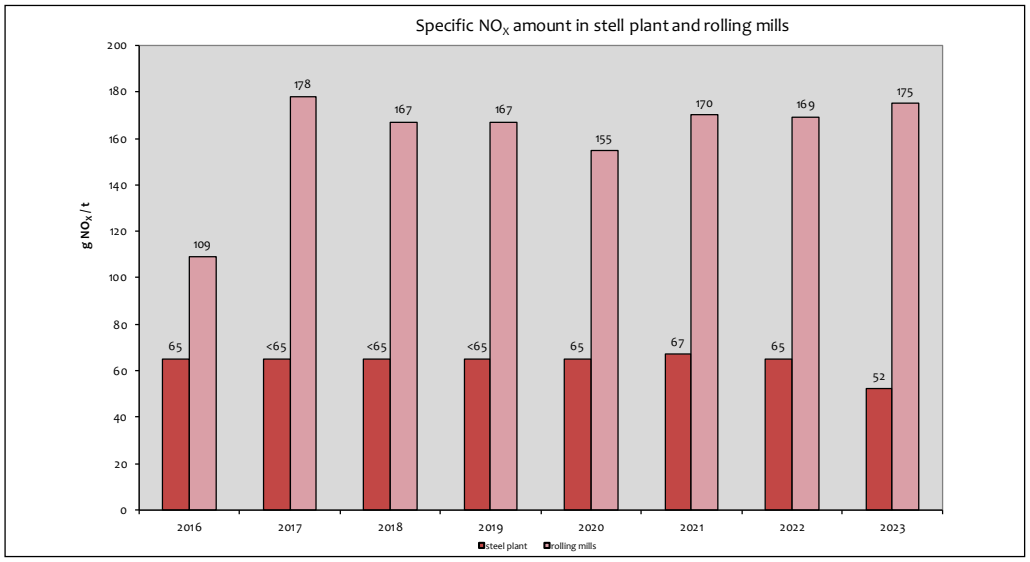
In the first trading period of the emission trading system (CO_2 trading) from 2005 to 2007 BSW in Kehl was defined as a benchmark for electric steel plants, i.e. we have the lowest CO_2 emission for comparable plants. This was approved by an independent expert and was also verified in the third trading period by Société



Générale de Surveillance Holding Deutschland GmbH (SGS), a subsidiary of the German TÜV on behalf of EUROFER (trade association of the European iron and steel industry). This means that even in the third trading period BSW describes the benchmark of electric steel plants. Since 2013, the rolling mill also participates in the emission trading. In the rolling mill the CO_2 emissions are exclusively produced by combustion of natural gas in the pusher furnace. We are currently in the 4th trading period.

NO_X-Emissions from pusher-type furnaces and steel plant

NO_X emissions occur during steel production and pusher furnace firing in the rolling mill.



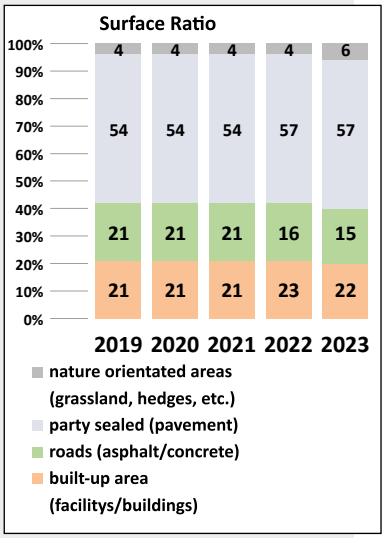
In the steel plant, the determination limit of the NO_X concentration is 0.01 g/Nm_3 (limit value 0.05 g/Nm_3). The values measured in 2017-2019 and in 2022 were below the determination limit, and therefore the specific values are given there as < 65 g NO_X/t. In the rolling mills (pusher furnaces 1 and 2), we are about two and three times below the prescribed limit values (limit value 400 mg/Nm_3). Pusher furnace 1 is measured every three years (measuring point according to § 29 BImSchG), pusher furnace 2 is measured continuously.

Pusher-type furnaces at the rolling mill

Two pusher-type furnaces - one in each rolling mill - reheat the billets produced in the meltshop and continuous casting plant to the required rolling temperature of approximately 1,150 °C. The natural gas serves as fuel.

The waste gases generated during pusher-type furnace operation are evacuated through recuperators to preheat the combustion air and thus save energy. BSW makes a special effort to charge billets into the pusher furnaces at a temperature as high as possible to minimize fuel consumption. At pusher furnace 2, nitrogen oxides (NO_X) are measured continuously and the parameters dust and carbon monoxide are measured every 3 years by an accredited measuring institute. At pusher furnace 1, nitrogen oxides (NO_X), dust and carbon monoxide are measured every three years by an accredited measuring institute.

5.3.6 Biological Diversity



Biological diversity includes the variety of ecosystems, of species, as well as the genetic variety within the species. Biological diversity is the basis of our existence. The listed core indicator is intended to serve a company as a starting point for dealing with the issue of biodiversity, to define appropriate measures out of it and to close the knowledge gaps existing in the first step. The next step is to use the information obtained to formulate appropriate measures and objectives. The key indicator started in 2019 and has continuously been presented from then on. Special attention is paid to the share of areas close to nature.

In 2021 already, a pilot project for the redesign of a certain area was be carried out. Further measures, such as the installation of insect hotels and bird nesting boxes, are being planned.

5.4 Noise

Since many years we have been devoting special attention to noise protection and have achieved an important reduction of noise pollution by taking extensive measures: completion of noise barrier in 1983, noise barriers scrap and billet yards in 1990, noise barrier at the front of the steel plant building in 1992, noise barrier rolling mill wall in 1993, noise protection at furnace and casting bay in 2002 and noise protection park in 2014. Besides that many small-scale measures are implemented continuously, in order to improve the noise protection. In the legal immission protection license of 2009 we have obtained approval for noise emission standards (please see the following table).

This means that the noise emitted at the measuring points of our plant must not exceed the mentioned values.
A digital display shows him his current operation mode, thus allowing him to take immediate action. Furthermore the values are recorded and can also serve as evidence (in case of complaints). For residents BSW has installed a telephone where messages are regularly picked up every working day
BSW is aiming at threshold values which are below the maximum permissible values. In order to reliably comply with these threshold values, any exceedance, measured during the night at the measuring point in Auenheim (a) is recorded in a protocol. Thanks to the parallel measurements at the scrap yard and the cranes (b), the reason for the exceedance of the threshold values can be determined by calculation. For continuous improvement these protocols are subject in the daily morning meeting of the steel plant.

With respect to our permission we repeat the measurement every three years, in order to prove the compliance with the immission values at all of our officially required measuring points and the effectiveness of our noise protection measures. Thus, for instance, in 2021 we measured the noise immission for a period of one month during day and night.

When constructing new facilities noise protection is already considered accordingly in the planning phase, thus achieving continuous improvement. An example of forward-looking noise protection is the rolling mill 2, which expanded in 2013/2014. With the overall expansion, a reduction in noise emissions in this area could be achieved.

	permitted noise immission values	**Immission values of measurement 2021**
measuring point	**at night in dB(A)**	**at night in dB(A)**
Parkstraße	43	40.9
Zollstraße	44	39.4
Wörthstraße	44	40.8

The noise measurement in 2021 confirmed the safe compliance of BSW with the noise immission values. Despite the results, the plant of Badische Stahlwerke will always be audible in Auenheim. In 2022, additional measurements were carried out with an acoustic camera in order to identify any weak points in the sound insulation of the steelworks building.

6. Environmental and energy management system

Objectives of environmental and energy management system

The environmental management system introduced in 1997 shall help to lead the employees' efforts for the environmental protection to a success and enhance the continuous improvement of the internal environmental protection. The responsibilities and the ways of written reporting are fixed. The environmental management system is geared to the existing systems EMAS III (modifications in 2017 and 2018) and DIN EN ISO 14001:2015. The energy management system as per DIN EN ISO 50001:2018 was integrated in the existing environmental management system with the objective to produce steel in an energy-efficient way, to minimize greenhouse gas emissions and to reduce energy costs.

Organization of internal environmental protection

The managing director and the **Operation Managers (OM)** are responsible for environmental protection and energy management at BSW. The company management provides the resources required for establishing, implementation, maintenance and improvement of the environmental and energy management.
The resources include the assignment of qualified employees and the provision of financial means. The company management determines the environmental and energy policies and checks them for their realization. An **environmental management officer** and an **energy management officer** have been appointed for the realization and maintenance of the environmental and energy management system. The activities in the individual parts of the company are coordinated by the persons internally instructed (Internal Officers/IO). These so-called "IOs" assist the Operations Managers (OM) and the plant Authorized Representatives (AR) in the performance of their tasks. OMs are responsible for environment- and energy-related subjects in their plant. The tasks of the ARs (e.g. waste, immission protection, water protection) depend on the legal requirements.

Due to internal environmental auditing we ensure an enhancement of the environmental performance. Similarly, we are evaluating continuously our energetic performance to increase the efficiency as our target.

We respond to emergencies in accordance with the context of our emergency management system and take preventive measures in advance to avoid them.

7. Objectives, individual targets and program

The objectives related to environment and energy are in compliance with the environmental and energy policy, take into account legal and other requirements and are also measurable as far as practicable. Objectives must not lead to any environmental pollution or deterioration of the energy situation. The realization of the environmental and energy objectives also incorporates the technical possibilities, the financial, operational and business requirements as well as the points of view of other interest groups.

The objectives are mainly based on

- Legal requirements
- Results of eco-audits
- Annual auditing of the management system
- Result of management review
- Site inspections
- Environmental and energy audits
- Evaluation of environmentally and energy relevant data
- Need for action due to environmental and energy aspects
- Proposals for improvement by employees

The total of all objectives make up the environmental and energy program.
The management of the company is responsible for the check-up and the adjustment of the environmental and energy objectives. The current objectives and the respective program are printed in the Environmental Declaration. The financial means and the time frame are fixed by the company management.
The improvement measures are completed with responsibilities and dates and integrated in the environmental and energy program. The figures stated in the Environmental Declaration show that we already have a very high environmental standard. Now we have set new objectives which will have to be put into effect.

Environmental and energy program from 2021 to 2022

Topic	Description	Measure	Dead-line	Status
Biodiversity	Landscape park maintenance concept Auenheim	Conversion of part of the noise barrier into a semi-natural landscape park	2021	To be implemented after amendment of the development plan
Electricity	Exhaustion ladle fires. Planned saving of 350,000 kWh/year	The exhaustion of the ladle fires will be optimized and demand actuated	2022	Implemented. Annual saving of 350,000 kWh
Electricity	Miscellaneous optimisations of illuminations. Planned savings of 88,298 kWh/year	In various areas the illumination will be changed from HQL light to LED	2022	Implemented. Annual saving of 88,298 kWh
Electricity	Energy refurbishment of the administration buildings. Planned saving of 37,000 kWh/year	Energy consumption in the administration building is to be optimised through various energy-saving measures	2022	Implemented. Annual savings: 37,000 kWh
Paper	Thermal paper Blu4rest. 50 rolls of conventional thermal paper are to be saved annually	Conventional thermal paper used in the canteen and magazine area is to be switched to Blu4rest	2022	Implemented
Soap	Foam soap dispensers. The use of foam soap dispensers should reduce soap consumption by 50 % and water consumption by 10%.	The use of foam soap dispensers should reduce soap and water consumption	2022	Implementation postponed due to delivery difficulties.
Biodiversity	Distribution of wildflower seeds to employees	Distribution of seeds for a wildflower meadow to motivate employees and improve their attitudes towards the promotion of biodiversity	2022	Implemented. 850 seed bags for 850 m^2 of wildflower meadow were distributed
Biodiversity	Installation of an insect hotel	An insect hotel is to be set up on the BSW premises to promote biodiversity	2022	Implemented
Well filler sand	Controlled filling of sand. Consumption to be reduced by 3 kg/heat	The manipulator SandMAN is to reduce the amount of sand used	2022	Implemented. In 2022, 58,000 kg of sand could be saved. Target will be continued
CO_2	Flap control to reduce CO emissions. The peaks of CO emissions are to be reduced by 5 %	An intelligent flap control system is to counteract increased CO levels in the off-gas	2022	Implemented. The CO peaks have been smoothed
Fuel	Conversion to e-cars. The aim is to save 1,200 litres of fuel.	Replacing of combustion engines with electric motors	2022	Annual saving 1,200 l fuel
Electricity	Various optimisations of lighting. 77,293 kWh/year are to be saved	In various areas, the lighting is converted from HRL luminaires to LED	2022	Implemented. Annual savings: 77,293 kWh
The following targets and programmes are planned for the next validation phase from 2023 to 2026				
Gas	Modernization of the ladle fires in the refractory hall	Ladle fires to be brought up to the state of the art. Potential was determined in 2023.	2023	Survey completed. The plan is to save 800,000 kWh/year.
Electricity	Various optimisations of lighting	In various areas, the lighting is converted from HRL luminaires to LED	2023	Implemented. Annual saving: 55,229 kWh
Electricity	Performance optimisation of evacuation in casting bay. Annual savings: approx. 30 %	The piping and the connection to the bag house have been optimised	2023	Implemented. Annual savings: 1,800,000 kWh
Electricity	Optimisation of the heating of the oil system in the rolling mill	Demand-oriented control of the heating of the oil plant	2023	Implemented. Annual savings: 25,200 kWh
Gas	Campaign: "every kWh counts“	Employees are encouraged to save heating energy and set the room temperature to 20 °C	2023	Implemented

Topic	Description	Measure	Dead-line	Status
Biodiversity	"Heimatwald"	550 trees to be planted in the forest of Kehl	2023	Implemented. 550 native trees of different species were planted This results in an annual CO2 binding of 8 tonnes
Fuel	Procurement of an electric forklift for the waste hall	The current diesel-powered forklift is to be replaced with an electric-powered model	2023	Implemented. Annual saving: 380 l of diesel
Electricity	Purchase of a new compressor in the compressed air station.	A compressor in the compressed air station is to be replaced with a more efficient model.	2024/ 2025	The plan is to save 62,000 kWh/year.
Electricity	Optimisation of lighting.	In various areas, the lighting is tob e converted from HQL lights to LED.	2024	Planning phase. The plan is to save 33,226 kWh/year.
Electricity/ gas	Inspection camera furnace 1.	A camera for automated monitoring of the furnace.	2024	Implemented. Saving of wasting time: up to 10 seconds/heat.
Waste	Cleaning rag leasing.	Multiple use of cleaning rags instead of disposal. Pilot project planned in a selected area.	2024	Up to 8 tonnes/year of oil-contaminated operating material can be saved.
CO_2	Certificates of origin for renewable energies.	Certificates of origin for approx. 7,400 MWh of renewable energies are purchased.	2024	Savings of approx. 5,000 tonnes of CO2 in electricity generation.
CO_2	Creation of an energy concept.	Search for innovative CO_2-neutral supply alternatives for non-core process-relevant areas.	2025	Planning phase
CO_2	Renewable energies.	An energy band for 10 MW of renewable energy is purchased.	2026	Savings potential can be determined by the end of 2026.
Heat	Heat recovery and extraction with the aim to utilise 70 GWh of heat per year. This should save up to 20,000 tonnes of CO_2.	The waste heat from the steelworks is to be decoupled and fed into a district heating network. Sub-step 2023: Foundations for heating centre. Sub-step 2025: Construction of heating centre.	2029/ 2030	Contracts to be concluded in 2024. Implementation of the project to be completed in 2029.

8. Validation and certificate

Der Unterzeichnende, Dr. Werner Wohlfarth, EMAS-Umweltgutachter mit der Registrierungsnummer DE-V-0049, akkreditiert oder zugelassen für den Bereich NACE-Code 24.1, NACE-Code 24.3 Herstellung von Stahl aus Schrott und die Weiterverarbeitung zu Draht und Stabstahl bestätigt, begutachtet zu haben, ob die Organisation

Badische Stahlwerke GmbH, Werk Kehl
Graudenzer Straße 45, 77694 Kehl
Registrierungsnummer DE 126 00007

wie in der Umwelterklärung angegeben, alle Anforderungen der Verordnung (EG) Nr. 1221/2009 des Europäischen Parlaments und des Rates vom 25. November 2009 über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS) erfüllt.

Mit der Unterzeichnung dieser Erklärung wird bestätigt, dass

- die Begutachtung und Validierung in voller Übereinstimmung mit den Anforderungen der Verordnung (EG) Nr. 1221/2009 durchgeführt wurden,
- das Ergebnis der Begutachtung und Validierung bestätigt, dass keine Belege für die Nichteinhaltung der geltenden Umweltvorschriften vorliegen,
- die Daten und Angaben der Umwelterklärung des Standortes ein verlässliches, glaubhaftes und wahrheitsgetreues Bild sämtlicher Tätigkeiten des Standortes innerhalb des in der Umwelterklärung angegebenen Bereiches geben.

Diese Erklärung kann nicht mit einer EMAS-Registrierung gleichgesetzt werden. Die EMAS-Registrierung kann nur durch eine zuständige Stelle gemäß der Verordnung (EG) Nr. 1221/2009 erfolgen. Diese Erklärung darf nicht als eigenständige Grundlage für die Unterrichtung der Öffentlichkeit verwendet werden.

Mit der Unterzeichnung dieser Erklärung wird ebenso bestätigt, dass die Begutachtung der Managementsysteme nach den Normen DIN EN ISO 14001 und 50001 und die Zertifizierung der Normen DIN EN ISO 14001 und DIN EN ISO 50001 in voller Übereinstimmung mit den Anforderungen der Normen durchgeführt wurden.

Leverkusen, den 02.05.2024

Der Umweltgutachter

Dr. rer. nat. Werner Wohlfarth
(DE-V-0049)

Dr. Werner Wohlfarth
Umweltgutachter
DE-V-0049

CERTIFICATE

EMAS
VERIFIED ENVIRONMENTAL MANAGEMENT

Badische Stahlwerke GmbH
Graudenzer Straße 45
77694 Kehl

Registration-No.: DE-126-00007

Date of first registration 8th May 1997

This certificate is valid until 31th May 2027

This organisation has established an environmental management system according to Regulation (EC) No 1221/2009 and EN ISO 14001:2015 section 4 to promote the continual improvement of environmental performance, regularly publishes an environmental statement, has let the environmental management system be verified and the environmental statement be validated by an independent and accredited verifier, is registered under EMAS (www.emas-register.de) and therefore entitled to use the EMAS-Logo.

IHK Südlicher Oberrhein

Freiburg, 23th May 2024

Dr. Dieter Salomon
Chief Executive

Zertifikat

Die

Badische Stahlwerke GmbH

- Werk Kehl -

BSW

verfügt über ein

Umweltmanagementsystem

und ein

Energiemanagementsystem

Durch ein Zertifizierungsaudit gemäß EMAS, DIN EN ISO 14001 und DIN EN ISO 50001 wurde der Nachweis erbracht, dass die Forderungen der

Verordnung (EG) Nr. 1221/2009 (EMAS)

und der Normen

DIN EN ISO 14001 und DIN EN ISO 50001

erfüllt sind.

Hinweise auf Abweichungen von einschlägigen Rechtsvorschriften liegen nicht vor.

Das Zertifikat ist gültig bis zum 16.05.2024

Leverkusen, den 17. Mai 2021

Dr. Werner Wohlfarth
Umweltgutachter
DE-V-0049

Dr. Wohlfarth
INIS GmbH

Dr. Werner Wohlfarth Umweltgutachter DE-V-0049

9. Sustainability management

According to the „Duden" (German dictionary) the ecological significance of the word sustainability is described as a principle saying that the quantity consumed must not exceed the quantity which can be renewed, regenerated or provided again in future.

BSW has two systems for this, the „WIN-Charta" and „SustSteel". The „WIN-Charta" is applied in Baden-Württemberg and mainly is supposed to take effect within the region. In Europe the system applied in the steel branch is „SustSteel" (seal of approval for sustainable steel). This is meant for example to respect and strengthen the good working conditions and environmental performances in Europe.

9.1 WIN-Charta

The charta of the business initiative for sustainability, shortly WIN-Charta, is defined by means of twelve guiding principles and is based on voluntary commitment, individual initiative and external communication.
The guiding principles cover the three pillars of sustainability: economy, ecology and social aspects. Together with 37 other companies in Baden-Württemberg BSW was the first to sign the WIN-Charta and declared to respect the corresponding guiding principles. During the coming years BSW's work and targets will be shown on the internet in the form of a set of planned objectives/sustainability report. This allows BSW to make their sustainability efforts visible to the public.

Our WIN-Project
Due to the geographical position near the French border the area is limited to 180°, and we would like to open the area on the French side to get 360°.
By means of transnational trainings including language school the number of apprentices is supposed to be confirmed despite the demographic changes, and young French people get the opportunity of a dual training in Germany.

9.2 SustSteel

Also out of Baden-Württemberg sustainability becomes more and more important. For EUROFER (European steel union) the subject of sustainability is an important part of the development and a future „label" for steel. In Europe, tendering and contracting will be subject to sustainability requirements in regard to the quality of the produced steel. This will be realized by awarding a seal of quality for sustainable steel (SustSteel) by means of a certification. BSW has successfully finished the first certification in 2014 and confirmed successfully in 2019. This certification also comprised subjects coming from the economical, ecological and social ranges.

BUREAU VERITAS Certification

Certification

Awarded to

BADISCHE STAHLWERKE GMBH

GRAUDENZER STRAßE, 45
D 77694 KEHL
ALEMANIA

Bureau Veritas Certification certifies that the Sustainability Management and KPIs System has been audited and found in accordance with SustSteel Regulations and its requirements*

STANDARD / REGULATIONS*

suststeel®

SUSTAINABILITY FOR STEEL CONSTRUCTION PRODUCTS MARK

Scope of Certification

HOT ROLLED STEEL PRODUCTION
NUMBER OF OVENS: 2 / NUMBER OF ROLLING MILLS: 2

Certificate Number:	ES105748-1	Certification Manager
Original Approval Date :	24/10/2014	
Effective Date:	24/10/2019	
Certificate Expiration Date:	23/10/2024	

55 years BSW - 550 trees for the native forest: Badische Stahlwerke plant 550 trees in Rheinau

Our people stand for success.

Impressum

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