ENVIRONMENTAL REPORT 2020

Updated environmental report for the Linz, Steyrling and Traisen locations

The content of the updated Environmental Statement 2020 complies with the requirements of EMAS III Regulation No. 1221/2009 as amended in 2018/2026 and refer to the validated locations in Linz, Steyrling and Traisen and the respective companies voestalpine Stahl GmbH, voestalpine Grobblech GmbH, voestalpine Giesserei Linz GmbH, voestalpine Giesserei Traisen GmbH, voestalpine Camtec GmbH, voestalpine Steel & Service Center GmbH, voestalpine Standortservice GmbH, Logistik Service GmbH, Cargo Service GmbH and voestalpine Automotive Components Linz GmbH. This document is a translation of the validated German document.

CONTENT

CLIMATE PROTECTION MEASURES

Climate protection and decarbonization present a major challenge in process and product development in energy-intensive industries such as the steel industry. voestalpine has been working intensively on research and development projects in an effort to implement technologies that allow the CO_2-lean production of consistently high-quality products.

voestalpine is committed to the objectives of the Paris Climate Protection Agreement in order to reduce greenhouse gas emissions by more than 80% by the middle of this century and is pursuing a consistent and long-term decarbonization strategy to achieve this goal.

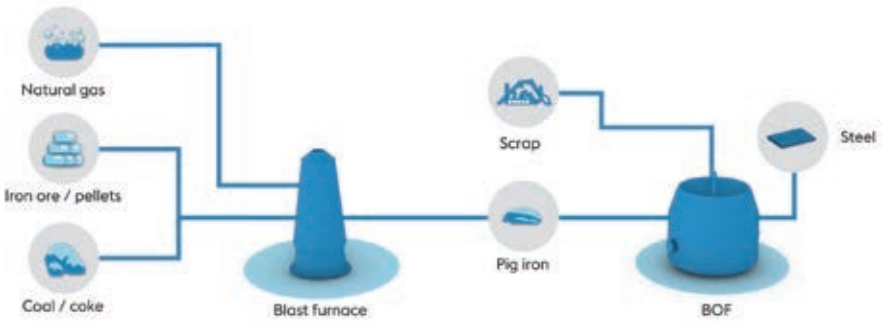
Extensive research and development programs such as H2FUTURE, which is an EU flagship project, for the production of green hydrogen on an industrial scale. H2FUTURE was successfully commissioned in 2019 and will run through 2021, enabling a switch in the long term from coal- to hydrogen-based steelmaking.

However, concrete intermediate steps are also being taken. A hybrid designed to make the gradual switch from a coal-based blast furnace route to a green electricity-based electric steel route is currently under economic and technical assessment and would reduce CO_2 emissions in steelmaking at the Linz and Donawitz sites by approximately one third after the year 2030. The technological challenge is ensuring consistently high product quality. The additional demand for renewable electricity for this technology would be up to three terawatt hours, which would also require expansion of the grid infrastructure.

In addition to hot metal, pig iron and scrap as demanding prematerials, the hybrid design also uses the hot-briquetted iron (HBI) produced by voestalpine using natural gas in the direct-reduction plant in Texas. This raw material mix with an increased portion of HBI is the most important factor in this innovative production route. The objective in the long term is to produce the same high-quality steel grades of today by replacing natural gas with hydrogen and utilizing green HBI and scrap.

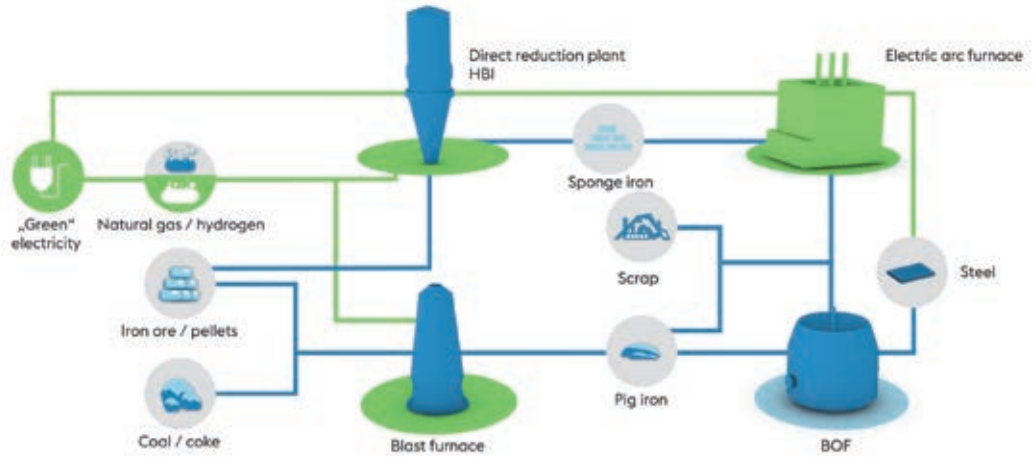
DECARBONIZATION OF THE STEELMAKING PROCESS

Traditional blast furnace route



HYBRID STEELMAKING PLANT THROUGH 2030/35

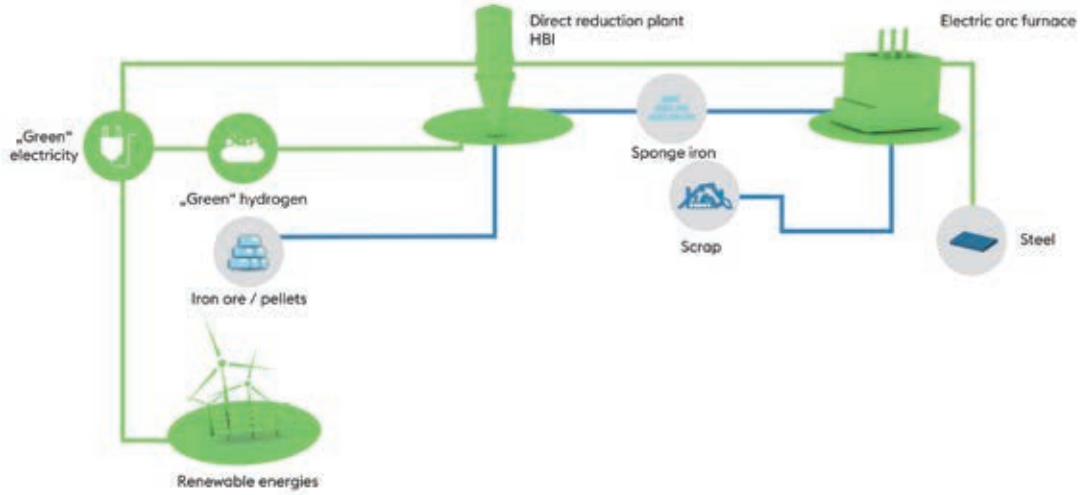
HBI as a high-quality prematerial (CO_2 emissions reduced by more than 30%)



The primary prerequisite for this transition is the availability and affordability of renewable electrical energy. Ultimately it will be crucial to competitively operate these CO_2-lean technologies on a global scale. The political framework, however, has not yet been established, and economic feasibility has not yet been proven. In addition to the long-term development of breakthrough hydrogen metallurgy, which is currently still in the developmental phase, voestalpine is carrying out research and development projects that focus on the hydrogen-based reduction of ores and the production of crude steel using hydrogen plasma.

BREAKTHROUGH TECHNOLOGY

Reduction of CO_2 emissions by more than 80% through 2050



In addition, voestalpine is working intensively on cross-sector projects that focus on the economic and technological feasibility of carbon capture and usage (CCU), which is the separation of carbon dioxide and its conversion into raw materials in the chemical and petrochemical industries.

2019/20 ENVIRONMENTAL PROGRAM IMPLEMENTED MEASURES

Excerpt of environmental measures implemented in the 2019/20 fiscal year

Essential environmental measures that have made a significant contribution to environmental performance are integral constituents of the environmental programs of companies included in the scope. The following tables document measures implemented in previous programs as well as objectives newly defined in the 2020/2021 environmental program. Further individual measures have been developed and implemented in the respective companies.

Company	Target	Task	Figure	Deadline
voestalpine Stahl GmbH	Diffuse dust emissions reduced in the coke loading and unloading facility	Construction of a dust extraction and dedusting system for dust collection at transfer points and conveyor belts	Target: Reduction of approximately 500 kg of dust per year Current status: Target of 500 kg achieved per year	12/31/2020
voestalpine Stahl GmbH	Energy efficiency increased by optimizing process control with regard to fuel consumption in the sintering plant	Installation of an automatic coke breeze sampling system in the mixing plant to determine grain sizes and to optimize the grain size	Target: Reduction of approximately 1,500 tons/year of solid fuel (coke breeze) = approximately 12,000 MWh/year Current status: Reduction of approximately 1,500 tons/year of solid fuel (coke breeze) = approximately 12,000 MWh/year achieved	6/30/2019
voestalpine Stahl GmbH	Reducing agent savings in 8-meter blast furnaces	Partial substitution of foreign coke by increasing the quality of our own coke	Target: Reduction of roughly 15,000 tons/year of external coke or roughly 49,000 tons/year of CO_2 Current status: Target 100% achieved	12/31/2019
voestalpine Stahl GmbH	Conservation of resources through optimized paint application in Continuous Annealing Line 2	Development of a new coating thickness measuring method for more accurate determination of coating thicknesses	Target: Reduction of coating requirements in C6 coatings by approximately 20% Current status: Development and testing have been completed, but implementation has been put on hold in the longer term	3/31/2020
voestalpine Stahl GmbH	Increased energy efficiency through optimization of exhaust steam pressure in the two turbines of the blast centers	Reduction and control of the condenser cooling water quantity by adapting the exhaust steam pressure from 0.09 to 0.12 bars	Target: Blast furnace gas reduced by roughly 6,600 MWh/year and roughly 8.8 million m^3/year of process water Current status: Reduction of blast furnace top gas by roughly 42,000 MWh achieved Service water was reduced by 5.5 million m^3/year	3/31/2020
voestalpine Stahl GmbH	Reduction of the use of natural gas in Mixed Gas Station 1	Gas system optimization and increased purchasing of external electric power	Target: A reduction of natural gas by roughly 130,000 MWh/year and an increase in the purchase of external power resulted in a reduction of roughly 15,000 tons of CO_2 per year. Current status: Savings were achieved	3/31/2020
Steyrling location	Reduction of electric power consumption in the production of quicklime	Reduction of power consumption resulting from lower furnace pressure	Target: Reduced by roughly 940 MWh/year Current status: Reduction was achieved of approximately 1,000 MWh per year	3/31/2020
voestalpine Giesserei Linz GmbH	Assessment of filter dust recycling in effort to reduce landfill quantities	Discussions and test series with partner companies	Target: 20 tons of filter dust recycled per year Current status: A one-off effect amounting to 17,325 tons was achieved in the 2019 FY. It was not possible to find a sustainable supplier	3/31/2020

Company	Target	Task	Figure	Deadline
voestalpine Giesserei Linz GmbH	Reduction of emissions in scrap processing	Optimization of the use of scrap in melting operations (reduced pre-shredding activity, shorter operating times for scrap cutting)	Target: Reduction of dust emissions by approximately 7.2 kg per year Current status: Dust emissions reduced by 7.2 kg per year	3/31/2020
voestalpine Giesserei Traisen GmbH	Reduction of chemical consumption	Installation of a new automatic sand mixer and introduction of a sand lab with automatic dosing of binding agents	Target: Reduction of roughly 20 tons of binding agents per year Current status: Reduction of binding agents by 115 tons	3/31/2020
voestalpine Camtec GmbH	Reduction of packaging material	Reuse of wooden crates at a customer (pilot, other customers possible)	Target: Reduction of packaging materials by 5 to 10% Current status: Savings of approximately 1,000 kg of wooden packaging	3/31/2020
voestalpine Steel & Service Center GmbH	Reduction of gas consumption in the shape cutting facility	Increased energy efficiency through purchase of a new annealing furnace with better insulation and annealing dimensions	Target: Consumption of natural gas reduced by roughly 60 MWh per year Current status: Technologically mature project postponed indefinitely due to economic viability (< 1 year)	3/31/2020
Logistik Service GmbH	Reduced consumption of diesel fuel on the works railway	Procurement of two new diesel locomotives with start-stop technology (1004.03 and .04 series)	Target: Diesel savings of roughly 5,225 liters per year per locomotive = total savings of roughly 10,450 liters year Current status: Diesel fuel savings achieved of 10,450 liters/year	10/31/2019
Cargo Service GmbH	Reduction of diesel fuel	Conversion from diesel to electric locomotive on the Steyrling-Kirchdorf route for 100% of journeys completed in the 2019/2020 fiscal year	Target: Reduction of roughly 9,250 liters of diesel fuel per year Current status: Liters of diesel fuel reduced by roughly 7,250 per year	3/31/2020
voestalpine Automotive Components Linz	Reduction of packaging material	Redesign of Jeep Compass packaging in order to reduce material consumption	Target: Packaging film reduced by roughly 5,600 m^2 per year Current status: Packaging film reduced by roughly 4,200 m^2	6/1/2019
voestalpine Standort Service GmbH	Reduced pollutant emissions from vehicles	Continuous replacement of vehicles used by works fire department, plant security and vocational health center with higher emission standards	Target: Conversion to EURO 6 (4 cars) or EURO 5 (1 truck) Current status: Target implemented and achieved	3/30/2020

Measures not implemented in the environmental program of the 2019/20 fiscal year

Company	Target	Task	Figure	Deadline
voestalpine Stahl GmbH	Reduction of cooling water	Exchange of three water-cooled steel rolls in hot-dip galvanizing line No.1 to non-cooled, full-ceramic rolls, thus eliminating energy loss to the cooling water	Target: Cooling water reduced by roughly 150,000 m^3 per year (roughly 4% of the annual discharge volume in Hot-dip Galvanizing Line No. 1) Current status: Target was not achieved because there has been no solution to date for problems with the full-ceramic rolls.	12/31/2019

2020/21 ENVIRONMENTAL PROGRAM
MEASURES BEING IMPLEMENTED

Company	Target	Task	Figure	Deadline
voestalpine Stahl GmbH	Coking plant: Soil vapour extraction: Reduction of BTEX content in future excavated material	Remediation of Linz coking plant 076 in Linz, stage 1: Extraction of BTEX from the contaminated underground air phase in the unsaturated zone (soil extraction)	Reduction of BTEX in contaminated soil to below 50 mg/m^3	12/31/2022
voestalpine Stahl GmbH	Reduction of fugitive dust emissions during coke pressing process	Optimization of the coke cake guide carriages and improved dust collection in the coke transfer machines	Reduction of approximately 6 tons of dust per year	3/31/2022
voestalpine Stahl GmbH	Reduced consumption of cooling water at the Linz location during the summer months as part of an experimental program	Optimized utilization of the temperature range between the Danube water inlet and the cooling water outlet in selected water lines	Result in final report on cooling water reduction in m^3 per year	12/31/2021
voestalpine Grobblech GmbH	Reduced energy consumption in heating units	Investment in a chamber furnace and optimization of the operation modes of the pusher-type furnaces (relocation of thick plating units to chamber furnace and thus optimizing the operation mode in pusher-type furnaces 1 and 2)	Target: Natural gas consumption reduced by roughly 4,600 MWh/year and coking gas consumption by roughly 4,900 MWh/year	Extended until 31 March 2021
voestalpine Grobblech GmbH	Reduced energy consumption in heating units	Increased energy efficiency through investment in a second chamber furnace and optimization of the operation modes of the pusher-type furnaces (relocation of thick plating units to chamber furnace and thus optimizing the operation mode in pusher-type furnaces 1 and 2)	Natural gas consumption reduced by roughly 4,600 MWh/year and coking gas consumption by roughly 4,900 MWh/year	Extended until 31 March 2021

2020/21 ENVIRONMENTAL PROGRAM
NEW MEASURES

Company	Target	Task	Figure	Deadline
voestalpine Stahl GmbH	Improved quantification of emissions in the coking plant	Recurring emission measurements in addition to those prescribed by law	Presentation of measurement reports	3/31/2021
voestalpine Stahl GmbH	Reduction of fuel input in annealing	Replacement of old annealing hoods with new ones	Burner gas consumption reduced by 600 MWh per year	12/31/2022
voestalpine Stahl GmbH	Reduction of energy input during charging of mixed materials in the sintering plant	Savings in ignition gas volume (coke-oven gas) by optimizing mixture	Target: Reduction of coke-oven gas by roughly 60 scm/h = roughly 2,500 MWh per year	3/31/2021
voestalpine Stahl GmbH	Reduction of precipitation discharge into sewage system and increase in underground water quantity by 10,100 m^3 per year (introduced into natural water cycle)	Beta 3 project: Throughout the project, roof water is no longer discharged into the sewer system, but into the subsoil.	Installation of an infiltration system	3/31/2022
voestalpine Stahl GmbH	Reduction of purge gas losses in blast furnace gas flares 5 and 6	Reduction of top gas purging quantities for flares 5 and 6 through additional measures that prevent backfiring	Reduced by roughly 3,900 MWh/year	3/31/2021
voestalpine Stahl GmbH	Increased energy efficiency in blast furnaces 5 and 6	Increased mixed blast temperature by 5 °C in blast furnaces 5 and 6 through structural changes in combustion air ducts and changes in combustion parameters	CO_2 reduced by roughly 1,372 tons per year	12/31/2020
voestalpine Stahl GmbH	Reduction of filter cartridges in wastewater treatment in hot-dip galvanizing and annealing lines	Installation of cleaning system with flow rate measurement	Filter tube consumption reduced by roughly 270 units per year	3/30/2021
Steyrling location	Reduction of dust emissions arising from the transport of grit in the steelworks	Dust emissions are significantly reduced by lowering the height of discharge, eliminating a conveyor belt and by altering the course by means of a reactivated bunker	Dust emissions reduced in grit transport by approximately 30%	3/31/2021
voestalpine Giesserei Linz GmbH	Reduction of pollutants such as CO_2, and NO_x	Coke oven gas heating methods replaced by infrared radiation	CO_2 reduced by roughly 5,000 Nm^3 per year, and NO_x reduced by roughly 500 Nm^3 per year	3/31/2021
voestalpine Giesserei Traisen GmbH	Increased efficiency of in-house-controlled transport vehicles for inbound and outbound deliveries	Development of a planning tool	Reduction of truck transport runs by 10	3/31/2021
voestalpine Camtec GmbH	Reduction of packaging material	Reuse of wooden boxes at our customers (being extended to other large customers)	Packaging materials reduced by roughly 5–10%	3/31/2021
voestalpine Steel & Service Center GmbH	Reduction of gas consumption in the shape-cutting facility	Reduction of the annealing temperature from 100 to 60 °C	Consumption of propane gas reduced by roughly 40 MWh per year	3/31/2021
voestalpine Standort Service GmbH	Conversion from fluorine-containing foaming agent to a fluorine-free one at the works fire department	Continuous replacement of fluorine-containing foam concentrate used by the works fire department in emergency vehicles or stored in the warehouse (roughly 1,900 liters)	Conversion from fluorine-containing to fluorine-free foaming agent	3/30/2021
Logistik Service GmbH	Reduced consumption of diesel fuel on the works railway	Acquisition of an electronic shunting module (iSi robot as replacement for diesel locomotive)	Target: Savings of approximately 43,500 liters of diesel per year	3/31/2021
Cargo Service GmbH	Reduction of energy consumption	Replacement of 6-axle railcars with modern 4-axle railcars (TansANT) for ore transport between Eisenerz and Linz	Reduction in traction current of 180 kWh x 500 trains = 90,000 kWh per year	3/31/2021
voestalpine Automotive Components Linz	Replacement of air-conditioning systems Elimination of old anti-freeze	Air-conditioning system in production line 1 upgraded to the latest generation (chilled water unit). Savings of R22 coolant. Better design efficiency. No losses through leakage.	Elimination of 444 kg R22 coolant per year, reduction of R410a coolant to 160 kg per year in chilled water unit	9/1/2020

PRODUCTION AND ENERGY FIGURES

The following production figures show the relevant environmental parameters for the companies included in this Environmental Report:

Linz location

Production volume	Unit	2017 CY	2018 CY	2019 CY
Crude steel (CS)	Million tons	5.75	4.62	5.25

Products	Unit	2017 CY	2018 CY	2019 CY
Hot-rolled strip (non-slit)	Million tons	1.1	1.0	1.0
Cold-rolled strip and electrical steel		1.054	0.908	0.961
Galvanized strip		2.212	2.1	2.1
Organic-coated strip		0.196	0.183	0.2
Heavy plate		0.8	0.6	0.5
Blast furnace slag		1.3	1.3	1.4
Castings in Linz	tons	6,214	5,912	5,212
Camtec castings		110	114	80
Laser-welded blanks		153,903	152,461	155,165
Products processed by SSC	Million tons	1.8	1.7	1.7

Energy	Unit	2017 CY	2018 CY	2019 CY
Natural gas [1]	TWh	3.37	3.86	3.57
Electric power (outside source)	TWh	0.482	0.589	0.461

Steyrling location

Products	Unit	2017 CY	2018 CY	2019 CY
Burned lime (BL)	Million tons	0.359	0.287	0.315
Armor stones		0.002	0.002	0.002
Fines (unburned)		0.512	0.513	0.618

Energy	Unit	2017 CY	2018 CY	2019 CY
Natural gas	GWh	342	282	308
Electric power		15	11	12

Traisen location

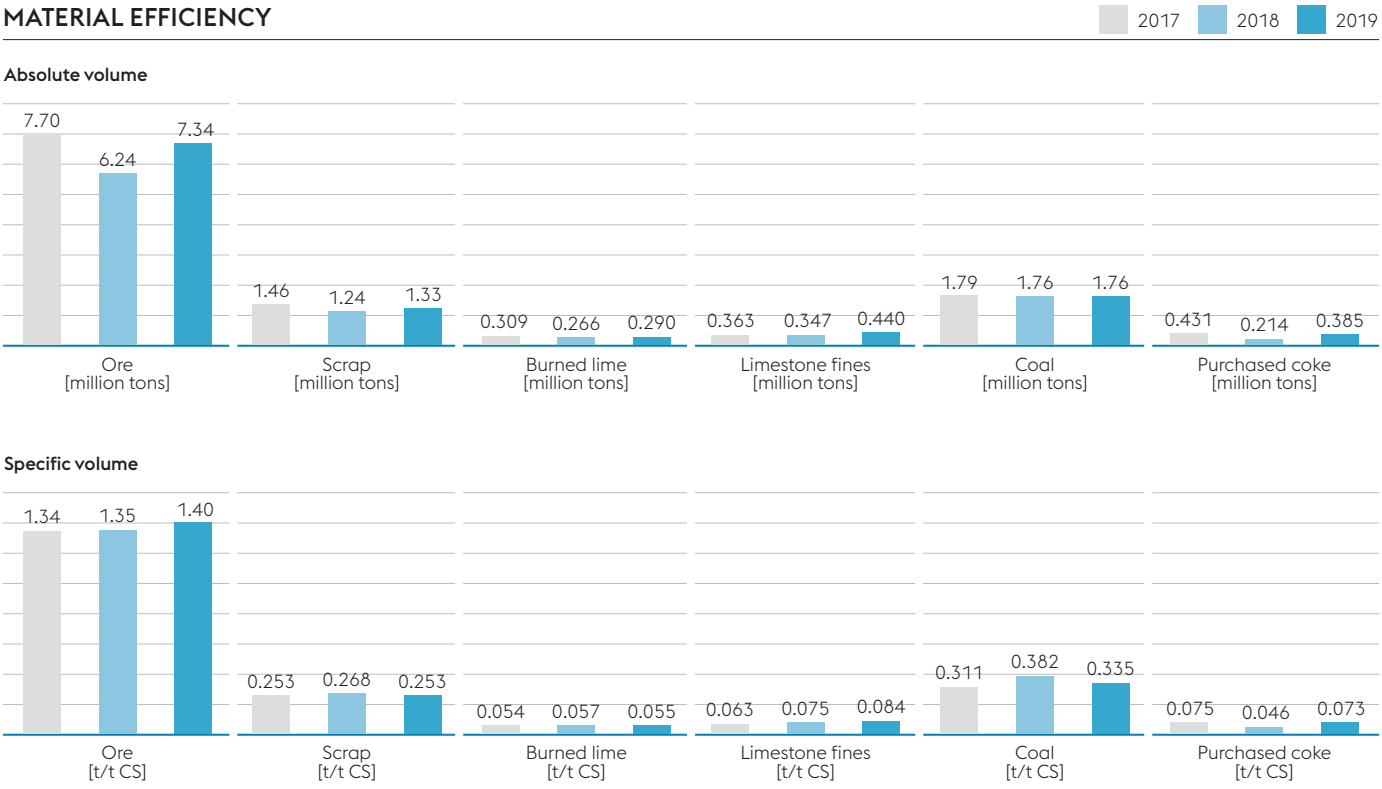
Production volume	Unit	2017 CY	2018 CY	2019 CY
Cast parts	tons	8,014 [2]	8,361 [2]	6,539
Cast parts	units	22,528	25,790	23,659

[1] Calculation was standardized in compliance with reporting obligations pertaining to energy monitoring (upper calorific value).
[2] Value was updated (reduced by 2 tons). This results in minor changes in the specific key figures (with reference to tons of castings) on pages 16 and 17.

CORE INDICATORS
LINZ LOCATION

The core indicators refer to total annual crude steel production. In the 2019 calendar year, the value was 5.25 million tons. In 2017 it was 5.75 million tons. In 2018 it was 4.62 million tons.

MATERIAL EFFICIENCY

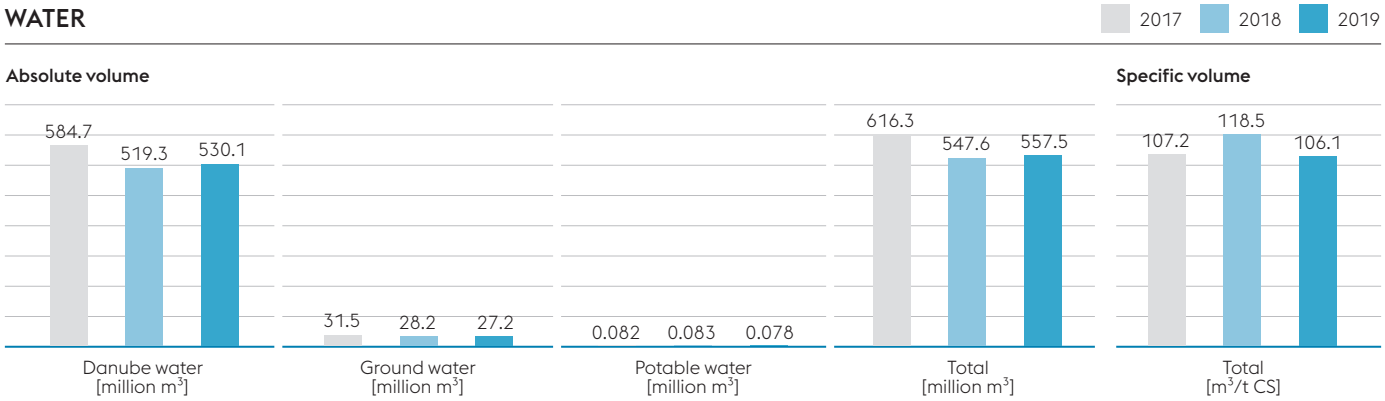


ENERGY EFFICIENCY

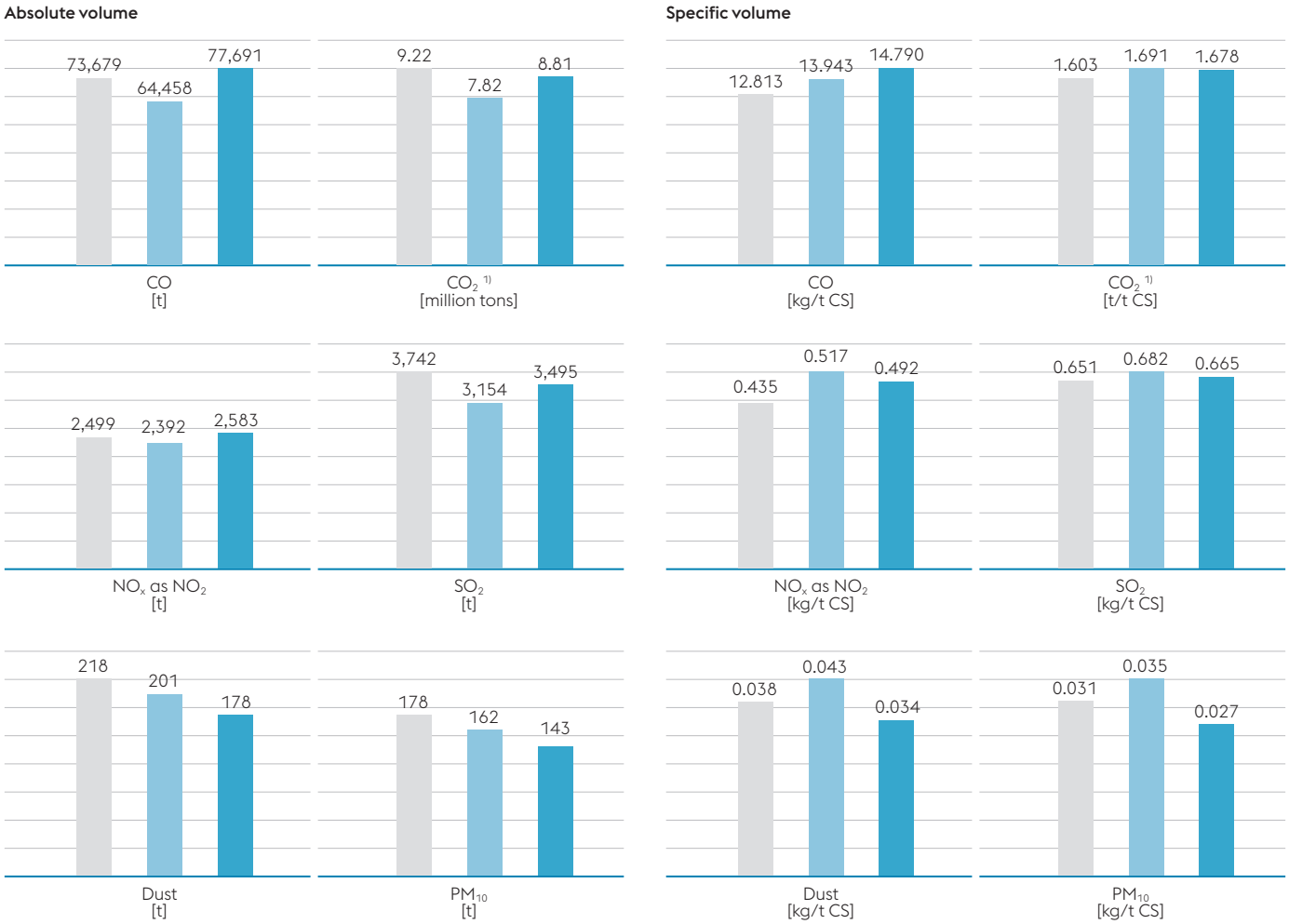
[1] Increased proportion of renewable energies with respect to electricity labeling from purchased third-party electricity. This reflects the following for the 2019 calendar year: water power (37.52%), solid biomass (3.16%), liquid biomass (0.01%), biogas (1.04%), wind energy (11.24%), photovoltaic power (2.28%), waste containing a high percentage of biogenic materials (1.88%), landfill gas (0.02%), sewage gas (0.01%) and geothermal energy (less than 0.01%).

CORE INDICATORS
LINZ LOCATION

WATER



EMISSIONS



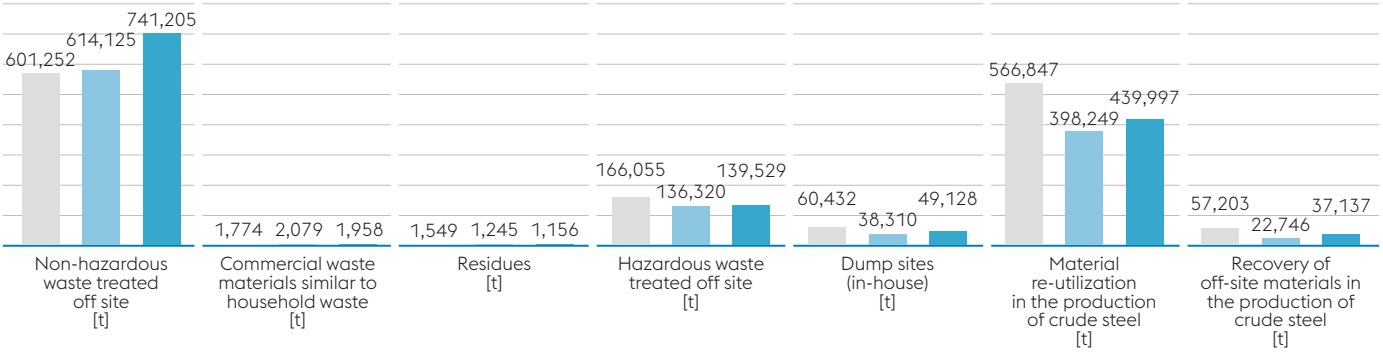
Other greenhouse gases such as methane and fluorochlorohydrocarbons (FCHC) are emitted in only small amounts (roughly 59 tons of methane and 40 kg of FCHC).

[1] From Emission Certificate Act (ECA) monitoring

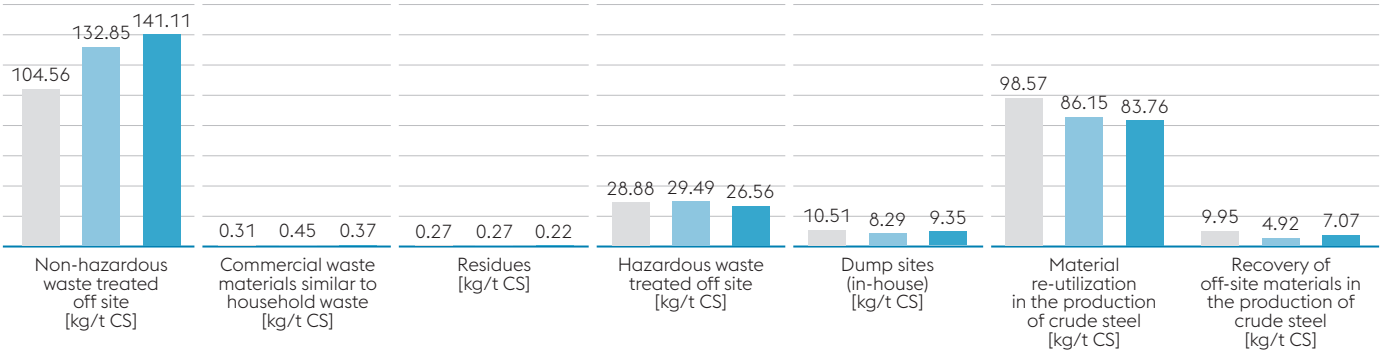
WASTE

2017 2018 2019

Absolute volume

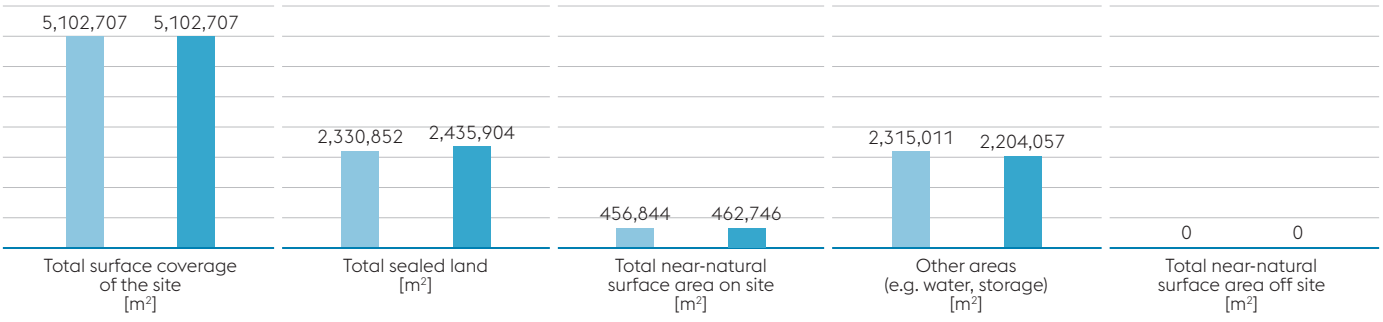


Specific volume



BIOLOGICAL DIVERSITY [2)]

Absolute volume



[2)] Core biological diversity indicator refers to the surface area of the works premises at the Linz location as registered in the land registry in December 2019.

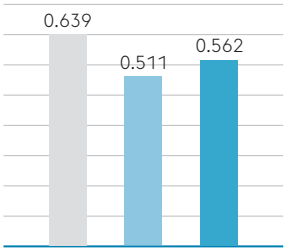
CORE INDICATORS
STEYRLING LOCATION

The core indicators refer to total annual burned lime production. In the 2019 calendar year, the value was 0.32 million tons. In 2017 it was 0.36 million tons. In 2018 it was 0.29 million tons.

MATERIAL EFFICIENCY

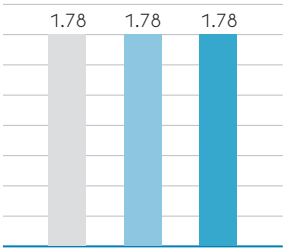
2017 2018 2019

Absolute volume



Limestone for the production of burned lime [million tons]

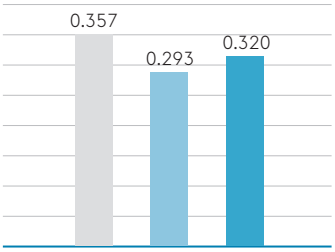
Specific volume



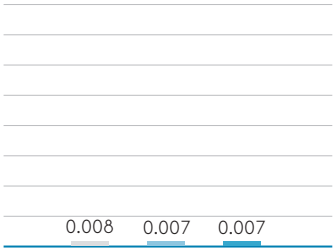
Limestone for the production of burned lime [t/t BL]

ENERGY EFFICIENCY

Absolute volume

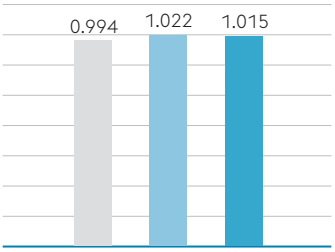


Total energy consumption [TWh]

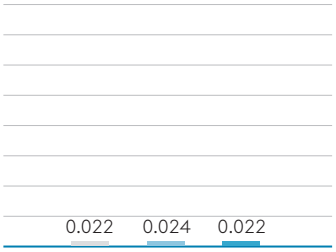


Portion of renewable energy [1] [TWh]

Specific volume



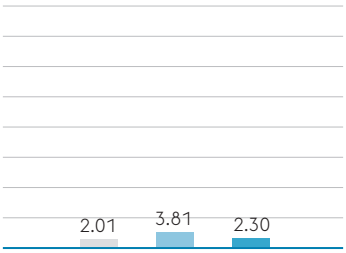
Total energy consumption [MWh/t BL]



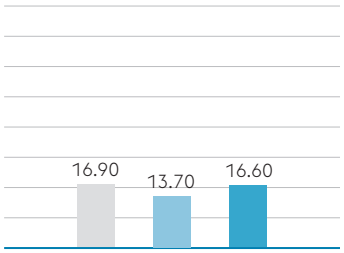
Portion of renewable energy [1] [MWh/t BL]

EMISSIONS

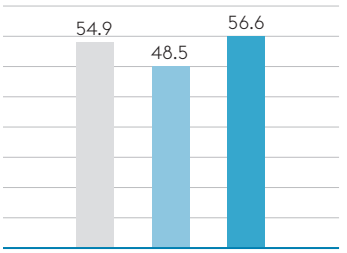
Absolute volume



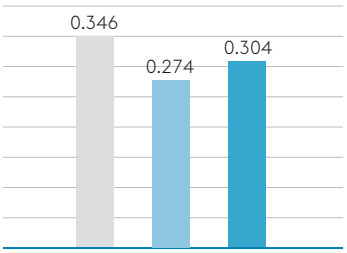
Dust [2] [t]



NO_x as NO_2 [3] [t]

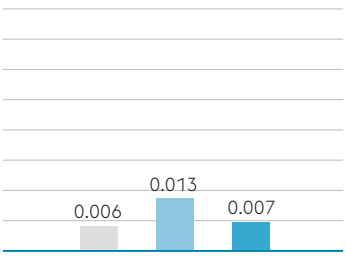


Diffuse dust emissions PM_{10} [t]

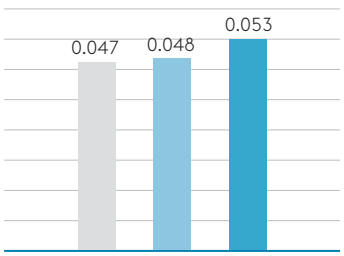


CO_2 [4] [million tons]

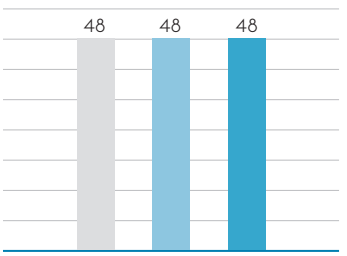
Specific volume



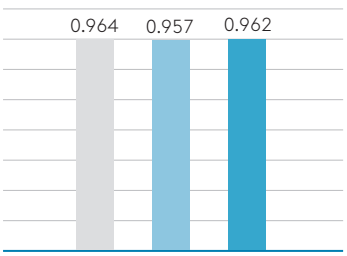
Dust [2] [kg/t BL]



NO_x as NO_2 [3] [kg/t BL]



Diffuse dust emissions PM_{10} [g/t LS]



CO_2 [4] [t/t BL]

[1] Increased proportion of renewable energies with respect to electricity labeling from purchased third-party electricity This reflects the following for the 2019 calendar year: water power (37.52%), solid biomass (3.16%), liquid biomass (0.01%), biogas (1.04%), wind energy (11.24%), photovoltaic power (2.28%), waste containing a high percentage of biogenic materials (1.88%), landfill gas (0.02%), sewage gas (0.01%) and geothermal energy (< 0.01%).

[2] Conversion to total dust (collected dust sources; retroactive over the past 3 years)

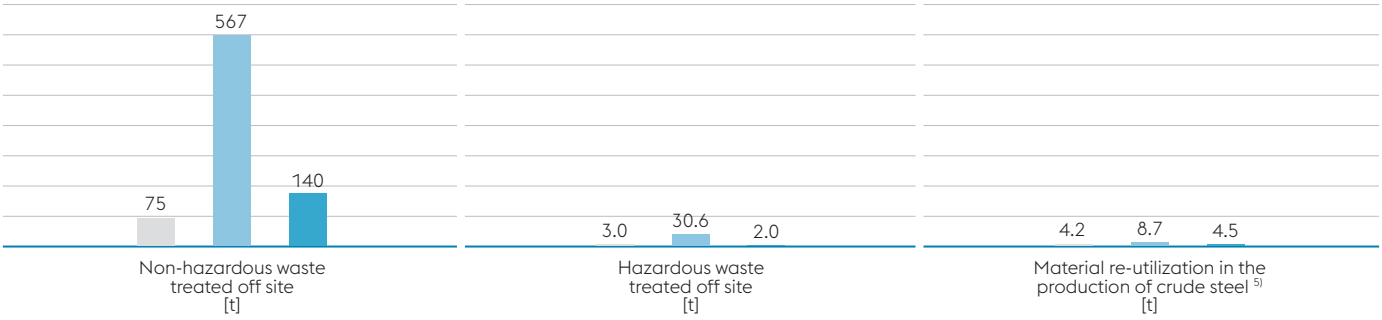
[3] Emissions from lime furnaces

[4] From Emission Certificate Act (ECA) monitoring

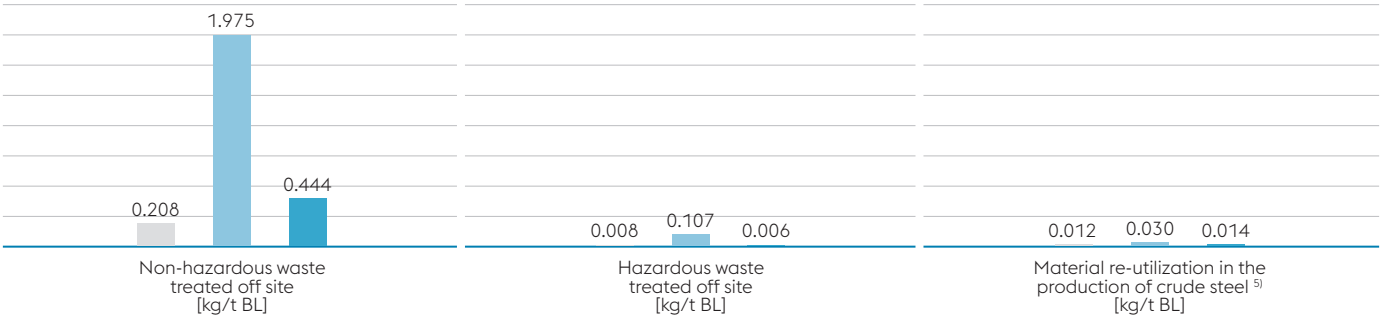
WASTE

2017 2018 2019

Absolute volume

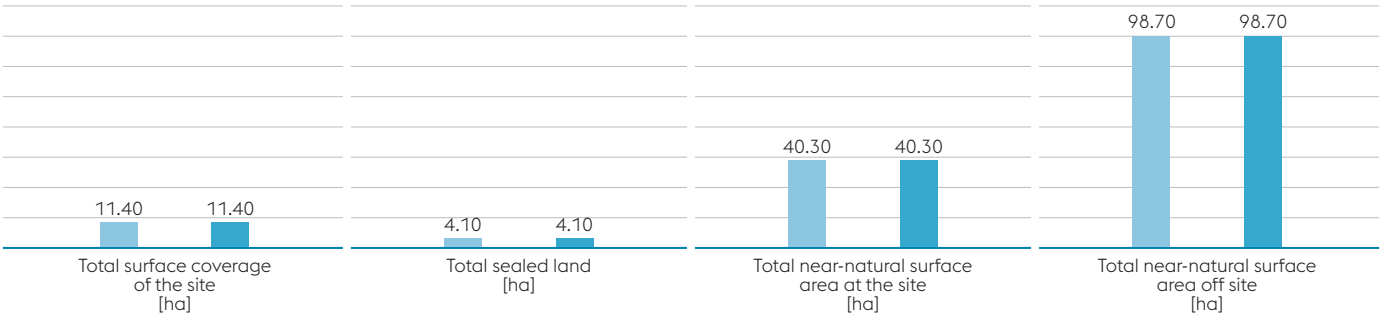


Specific volume



BIOLOGICAL DIVERSITY 6)

Absolute volume



5) Material recycling at the Linz location

6) The core biological diversity indicator refers to the surface of the works premises at the Steyrling location as registered in the land registry in May 2019.

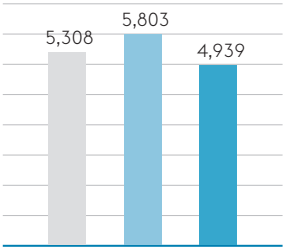
CORE INDICATORS
TRAISEN LOCATION

The core indicators refer to total annual casting production.
In the 2019 calendar year, the volume was 6,539 tons.
In 2017 it was 8,014 tons. In 2018 it was 8,361 tons.

MATERIAL EFFICIENCY

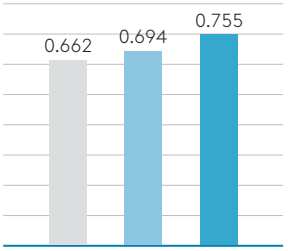
2017 2018 2019

Absolute volume



Recycling scrap [t]

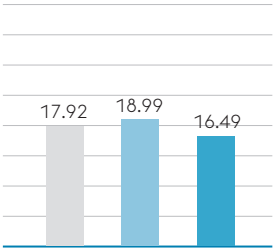
Specific volume



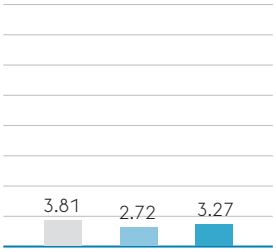
Recycling scrap [t/t castings]

ENERGY EFFICIENCY

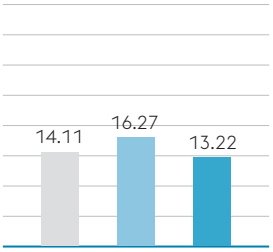
Absolute volume



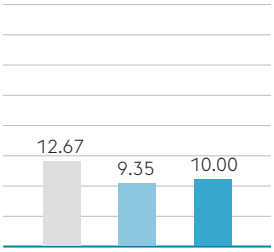
Total electric consumption [GWh]



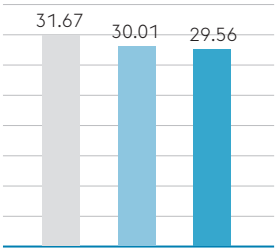
Power generation [GWh]



Purchased electric power [GWh]

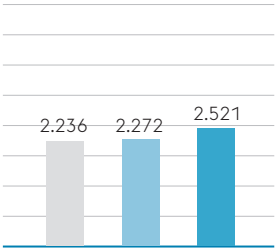


Portion of renewable energies [1] [GWh]

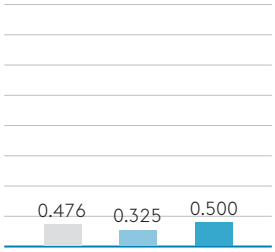


Gas consumption [GWh]

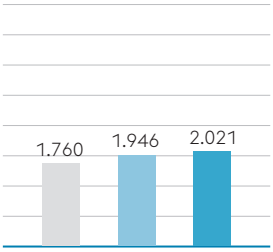
Specific volume



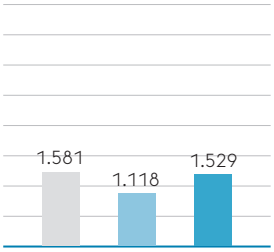
Total electric consumption [MWh/t casting]



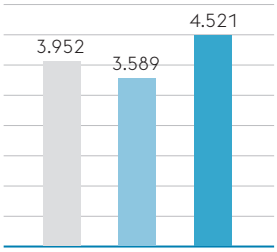
Power generation [MWh/t casting]



Purchased electric power [MWh/t casting]



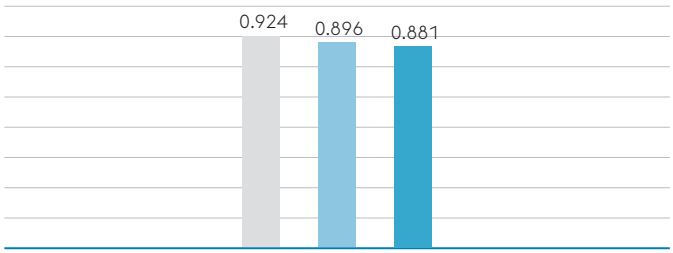
Portion of renewable energies [1] [MWh/t casting]



Gas consumption [MWh/t casting]

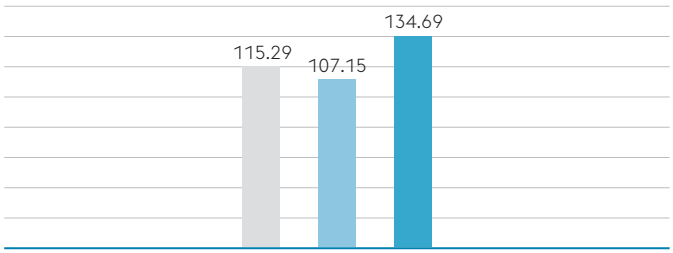
WATER

Absolute volume



Total water consumption [million m^3]

Specific volume



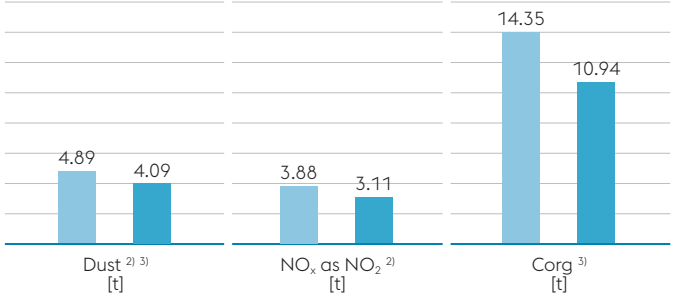
Total water consumption [m^3/ton casting]

[1] Determination of share of renewable energies based on official disclosure arising from purchased external electric power and electricity generated by the two hydro-power plants. During the 2019 calendar year, externally supplied electricity was generated by water power (26.94%), wind energy (8.51%), solid biomass (3.3%), photovoltaics (1.02%), other eco-energies (0.97%), natural gas (3.74%) and other sources (3.28%).

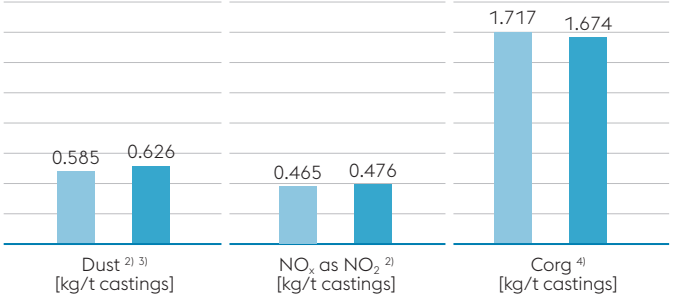
EMISSIONS

2017 2018 2019

Absolute volume

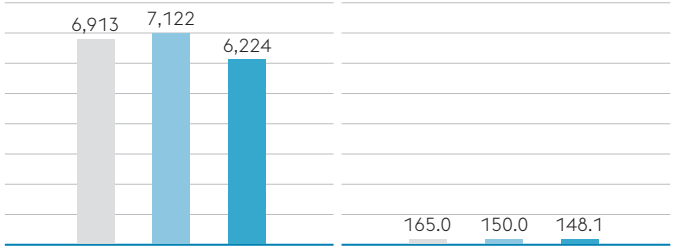


Specific volume

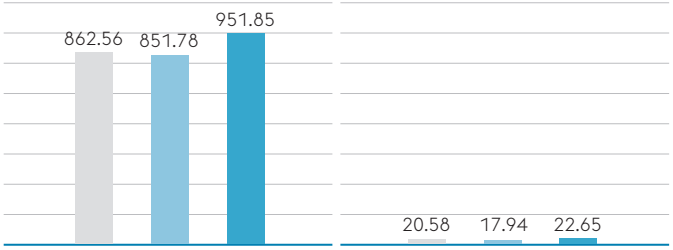


WASTE

Absolute volume

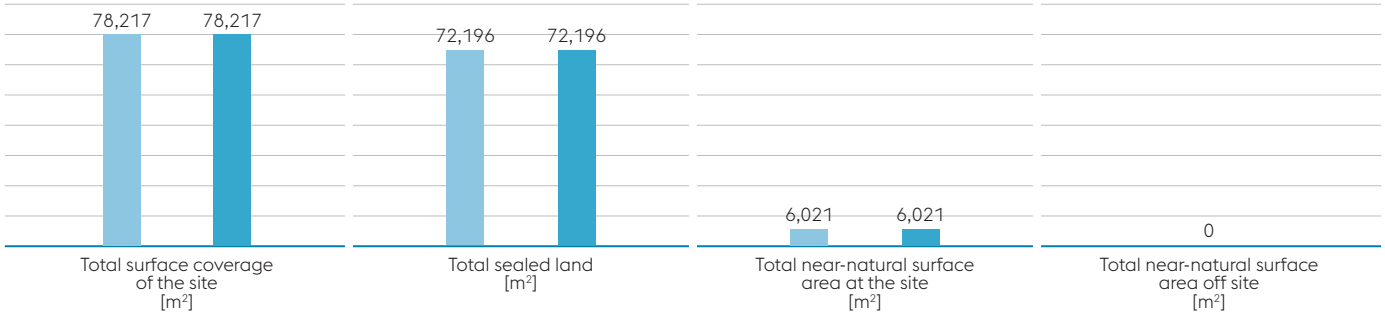


Specific volume



BIOLOGICAL DIVERSITY 5)

Absolute volume



2) Emissions from production systems
3) Value adjustment: The previous year's figure amounted to 9.03 tons and was subsequently reduced by the retirement of two plants in 2016. This results in an improvement of absolute and specific dust content.
4) From annealing furnace/bogie hearth furnace
5) The core biological diversity indicator refers to the surface area of the works premises at the Traisen location as registered in the land registry in February 2019.

CIRCULAR ECONOMY
BY voestalpine

Versatile, durable and environmentally friendly, steel is the material of the future.

Steel is durable, easy to repair and can always be recycled into new steel products. The unique properties of steel, such as product weight reduction, durability and processability, make it the number-one material of the future and indispensable in a wide variety of industries.

STEEL MEETS ALL THE REQUIREMENTS OF A FUTURE CIRCULAR ECONOMY.

Reduce. Product weight and the amount of material used can be reduced by using modern steel grades.

Reuse. The longevity and durability of steel allows continuous reuse of products.

Repair. Because to their manufacturing properties, steel products can be remanufactured or repaired for different purposes using various manufacturing techniques.

Recycle. Steel products can be recycled in a closed loop over and over again into new steel products.

The circular economy has long been implemented in many areas at voestalpine

and is being further developed on a continual basis.

At the political level, the term stands for an ambitious package of measures and legislation adapted and published by the European Union Commission in 2015 to take into account the growing importance of this approach in our society as well as in the European and global economies.

This includes all phases of value creation (the entire lifecycle) from production, use and consumption to end of life (waste management and loop closure) and the creation and further development of markets for secondary raw materials. All these measures are intended to foster development in Europe toward a circular economy, strengthen global competitiveness and promote sustainable economic growth.

The concept of a circular economy aims at developing and closing material cycles and value chains:

- Maintain added value of the products by using them for as long as possible
- Keep substances and materials available in the overall system by closing the loop and making them available again as secondary raw materials in order to preserve their value

This minimizes waste (towards ZERO WASTE) and increases resource and energy efficiency.

Steel products contribute to the progress our circular economy because modern steels can reduce the amount of materials used in products (reduce), steel products can be reused because of their durability and longevity (reuse) and can be repaired using a variety of different manufacturing techniques (repair/re-manufacture). Steel products can always be recycled in a closed loop to make new steel products.

In a circular economy, a fundamental aspect of product assessment is a holistic view that takes into account ecological, social and economic factors throughout the entire lifecycle of the product.

Product sustainability encompasses all three pillars of sustainability along the entire supply and value chain. At present, the focus is on environmental aspects.

Life cycle assessment (LCA) is the method used to systematically assess the environmental impacts of products throughout their entire lifecycle. Several impact categories are considered, including carbon footprint (CO_2), acidification potential (SO_2, NO_x), primary energy demand and much more.

This holistic view within the system boundaries is necessary in order to transparently and objectively identify burden shifting in the environmental impact between lifecycle phases or between different impact categories.

Environmental product declarations (EPDs) are an important tool for providing transparent and neutral information

on the environmental impact of products based on a life cycle assessment. voestalpine has developed and published EPDs for various products such as colofer®, hot-dip galvanized steel strip, heavy plate, roll-bonded clad plates and rails.

EPDs are based on the EN15804 and ISO14025 standards, are third-party verified by independent auditors and are published as part of the declaration program of the Institut Bauen und Umwelt (IBU) in Berlin.

voestalpine also assesses the water footprint for the Linz site based on holistic methods.

Material cycles can only be developed and the loop closed if the products do not contain substances that inhibit or counteract the closure of a loop. A corresponding legal framework governs the handling of such substances as well as the reporting obligations and verifying.

These include REACH (Registration, Evaluation, Authorization and Restriction of Chemicals), RoHS (Restriction of Hazardous Substances) and the directive on end-of-life vehicles. The products of the voestalpine Steel Division meet all pertinent requirements (material compliance).

The circular economy concept with development and material loop closure as well as material and value creation cycles to increase resource and energy efficiency is implemented in the Linz-site manufacturing processes of voestalpine. Waste and circulating materials from steel production as well as waste and secondary raw materials from external production processes are used in the production processes at the Linz site. Additionally, material cycles (product and secondary raw materials) in the supply chain are established and promoted.

The establishment and expansion of so-called industrial symbioses, for example the use of by-products from steelmaking processes as secondary raw materials for the production of products in other industrial sectors, contribute to the further development of the circular economy. These industrial symbioses include, for example, the use of granulated blast furnace slag as an additive in cement production, the use of coal by-products from the coking process in the chemical industry and regeneration products such as iron oxide for the production of components in electronics and electrical applications.

Circular economy is not a theoretical approach at voestalpine. The steel products made by voestalpine are versatile, durable and sustainable, and the production processes at the Linz site are optimized on a continual basis to further increase resource and energy efficiency. voestalpine is an integral part of the circular economy along the entire value chain.

ENVIRONMENTAL FOCUS ON AIR

The reduction of emissions is an essential target. The results are very favorable.

-95%

A savings of 95% dust per ton of crude steel is only one of the many values that voestalpine substantially improved. The reduction of specific emissions at the Linz location is impressive. Since the mid 1980s, SO_2 and NO_x have also been reduced by 75%, and CO_2 by roughly 20%.

Reduce. Process-integrated measures such as new burner technologies

Reuse. Circulation in dust management, such as zinc in the LD3 steelmaking plant, or of activated carbon and sodium bicarbonate in the sintering plant

Repair. Coal grinding and drying plant with post-combustion, filter bag exchange, regular cleaning of $DeNO_x$ heat plate exchangers, end-of-pipe technologies

Recycle. Reuse of the casting hall dust in the sintering plant

Implementing state-of-the-art technologies takes a high priority at the Linz location in order to avoid or reduce emissions.
More than 70% of the emissions are continuously measured and are transmitted online to the local environmental authorities. The remaining emissions are assessed in compliance with official requirements in prescribed intervals.

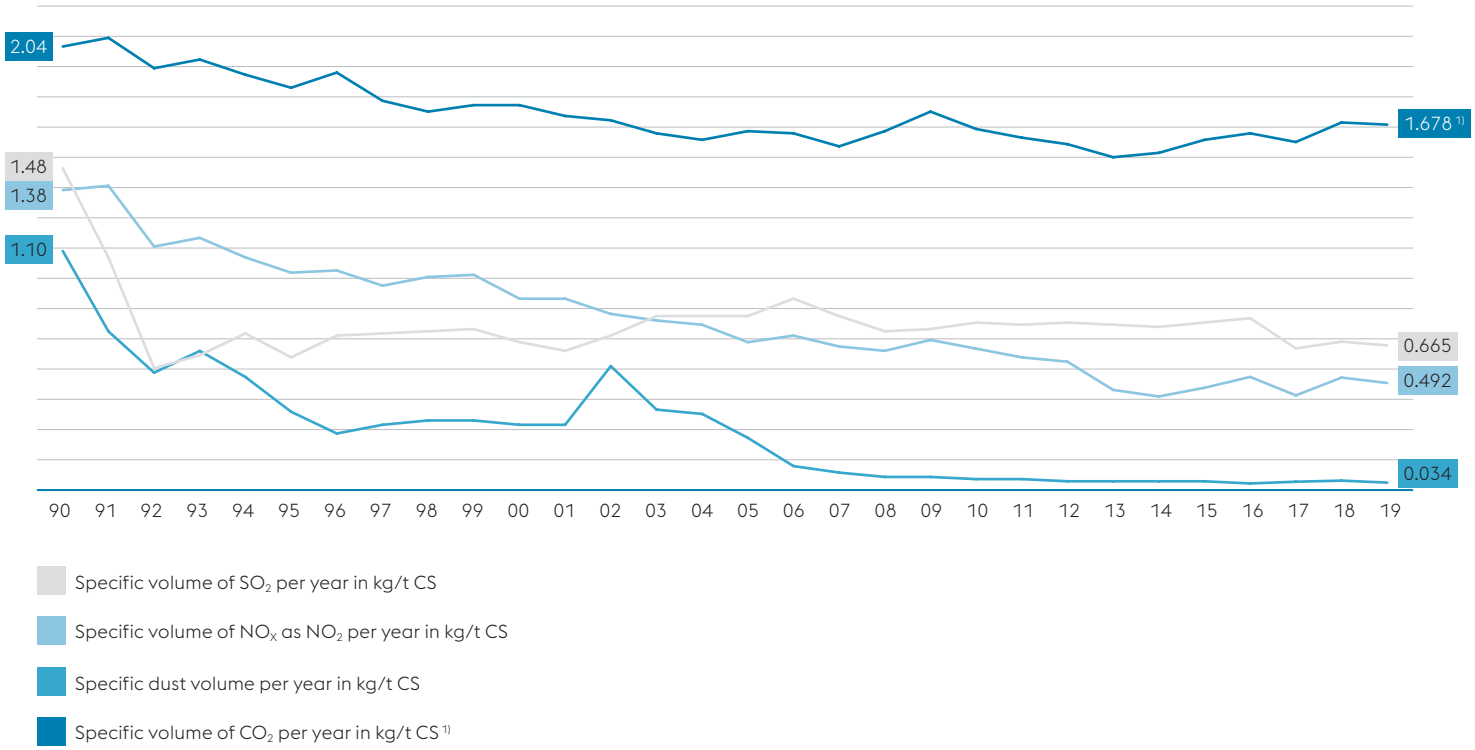
The emissions from lime extraction at the Steyrling location during the 2019 reporting year were minimal as compared to the previous year. Activities involving particularly large amounts of dust, such as blasting, while taking weather conditions into account.

The voestalpine foundry at the Traisen location takes effective air pollution control measures to sustainably improve the air quality, meet legal obligations and pursue its own interests. Best available technologies are implemented to achieve the best results.

Specific air emissions
Continual further development of production processes and the implementation of numerous air-pollution-control measures have led to a significant reduction in emissions.

EMISSION REDUCTIONS AT THE LINZ LOCATION

per ton of crude steel since the middle of the 1980s



1) Pursuant to the Emissions Certificate Act 2011, as amended

Continuous emission measurements at the Linz location

NO_x as NO_2	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Power station	Block 06	100	77	66	80
	Block 03	100	48	46	42
	Block 04	100	38	46	51
	Block 05	100	45	42	49
	Block 07	100	38	42	50
	Gas and steam turbine	33	27	25	28
Blast furnace blower station	Central blower station 2, boiler 1	100	3	7	1
	Central blower station 2, boiler 2	100	6	5	3
Hot-rolling mill	Pusher-type furnace 06	430	274	270	292
	Pusher-type furnace 07	430	191	199	209
	Walking-beam furnace 1	[1]	86	115	114
Sintering plant	Sinter belt 5	150 [2]	88	85	86
Cold-rolling mill	Hot-dip galvanizing line III	250	141	148	88
	Hot-dip galvanizing line IV	250	102	94	101
	Hot-dip galvanizing line V	250	140	153	155
Heavy plate	Pusher-type furnace 1	500	331	370	398
	Pusher-type furnace 2	300 [3]	163	167	172

SO_2	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Power station	Block 06	200	61	63	71
	Block 03	200	81	89	96
	Block 04	200	88	89	111
	Block 05	200	78	91	97
	Block 07	200	85	94	99
	Gas and steam turbine	67	31	29	32
Blast furnace	Casting bay dedusting (BF A)	350	93	88	80
LD steelmaking plant	Secondary dedusting 1	101.5 [4]	18	21	22
Hot-rolling mill	Pusher-type furnace 06	200	113	114	125
	Pusher-type furnace 07	200	47	49	53
Coking plant	Sulfuric acid and gas purification plant	1,000 [5]	370	393	372
Sintering plant	Sinter belt 5	350	289	269	296
Heavy plate	Pusher-type furnace 1	200	103	111	120

All emission sources are continuously monitored. The data refer to the respective calendar year.

[1] The limit value is defined in the course of the acceptance test.

[2] Sinter Belt No. 5: additional limitation of daily mean values for NO_x of 100 mg/scm.

[3] Sinter Belt No. 2: additional limitation of daily mean values for NO_x of 200 mg/scm.

[4] SO_2 limit values in kg/h.

[5] There is also a fraction limit value of 150 kg SO_2/day under normal operating conditions.

CO

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Power station	Block 03	100	0.7	5.9	6.6
	Block 04	80	3.9	5.6	13.3
	Block 05	80	2.4	7.1	10.6
	Block 07	80	0.8	9.1	8.8
	Gas and steam turbine	33	2.0	2.8	3.8
Blast furnace	Central blower station 2, boiler 1	80	0.6	1.3	3.7
	Central blower station 2, boiler 2	80	<0.1	3.2	4.5
Coil coating line	Coil coating line 1	100	4.6	0.5	1.0
	Coil coating line 2	100	8.1	6.1	6.9

Total carbon

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Coil coating line	Coil coating line 1	30	2.4	1.2	1.7
	Coil coating line 2	30	3.7	3.1	3.7

H_2S [1)]

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Coking plant		500	228	228	274

HF

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Sintering plant	Sinter belt 5	3.0	1.4	1.5	0.7

Hg

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Sintering plant	Sinter belt 5	0.050	0.042	0.042	0.042

Dust

	Production line	Half-hour average value (mg/scm)	Measured annual average value (mg/scm)		
		Limit value	2017 CY	2018 CY	2019 CY
Blast furnace	Casting bay dedusting (BF A)	15	5.6	5.3	3.7
	Casting bay dedusting system (BF 5 and 6)	10	1.6	1.6	1.1
Sintering plant	Sinter belt 5	10	2.5	2.4	2.4
	Sinter plant dedusting	10	4.7	4.3	1.9
	Sinter crusher and screening unit (SIBUS)	10	1.5	1.5	1.7
LD steelmaking plant	Secondary dedusting 1	10	4.3	5.6	4.8
	Secondary dedusting 2.1	10	3.0	2.7	2.3
	Secondary dedusting 2.2	10	1.2	1.0	0.4
	Secondary dedusting 3.1	10	0.1	0.1	0.1

The emission concentrations listed in this table refer to the legally prescribed oxygen content, (e.g. emission protection law on boiler plant systems, directive on iron and steel).

All emission sources are continuously monitored. The data refer to the respective calendar year.

[1)] H_2S is contained in the coke gas that is energetically utilized in other process steps. Emissions only occur in the form of SO_2.

Emission measurements at the Steyrling location

NO_x as NO_2	Production line	Limit value (mg/scm)	Measured value (mg/scm)		
			2017 CY	2018 CY	2019 CY
Steyrling Lime Plant	Furnace 4	300	12.6	16.5	Stand by
	Furnace 5	300	12.5	16.0	15.7
	Furnace 6	300	27.3	[1]	23.7
	Furnace 7	300	19.8	24.3	22.0

CO	Production line	Limit value (mg/scm)	Measured value (mg/scm)		
			2017 CY	2018 CY	2019 CY
Steyrling Lime Plant	Furnace 4	150	4.1	9.2	Stand by
	Furnace 5	150	14.1	9.1	8.0
	Furnace 6	150	5.4	[1]	12.7
	Furnace 7	150	12.5	12.8	10.3

SO_2	Production line	Limit value (mg/scm)	Measured value (mg/scm)		
			2017 CY	2018 CY	2019 CY
Steyrling Lime Plant	Furnace 4	100	1.7	< NWG [3]	Stand by
	Furnace 5	100	3.1	< NWG [3]	< NWG [3]
	Furnace 6	100	1.6	1.6	< NWG [3]
	Furnace 7	100	< NWG [3]	< NWG [3]	< NWG [3]

Dust	Production line	Limit value (mg/scm)	Measured value (mg/scm)		
			2017 CY	2018 CY	2019 CY
Steyrling Lime Plant	Furnace 4	10	2.9	6.2	Stand by
	Furnace 5	10	1.1	8.2	0.9
	Furnace 6	10	1.9	[1]	1.4
	Furnace 7	10	1.7	2.9	0.3
	Furnace discharge 4	10	[2]	[2]	Stand by
	Furnace discharge 5	10	[2]	[2]	0.8
	Furnace discharge 6	10	[2]	[2]	1.3
	Furnace discharge 7	10	[2]	[2]	1.2
	Lime extraction	10	[2]	[2]	7.8
	Lime loading	10	[2]	[2]	0.5

[1] Standstill for conversion of lime furnace 6 to a circular shaft furnace, no measurements taken
[2] Measuring interval every 3 years, next measurement in the 2022 CY
[3] Below the detection limit for pollutants

Emission measurements at the Traisen location

Dust

	Production line	Limit value (mg/scm)	Measured value (mg/scm) Most recent measurement in the 2018 CY [1]
			2018 CY
voestalpine Giesserei Traisen GmbH	Dedusting in the melting plant	10	< 1
	Mixer 1, molding line	10	9.5
	AAF Bay 3	10	4.5

NO_x as NO_2

	Production line	Limit value (mg/scm)	Measured value (mg/scm) Most recent measurement in the 2018 CY [1]
			2018 CY
voestalpine Giesserei Traisen GmbH	Annealing Furnace 6	350 (at < 800 °C)	317
	Annealing Furnace 7	350 (at < 800 °C)	193
	Annealing Furnace 9	350 (at < 800 °C)	115

C.org

	Production line	Limit value (mg/scm)	Measured value (mg/scm) Most recent measurement in the 2018 CY [1]
			2018 CY
voestalpine Giesserei Traisen GmbH	Dedusting in the melting plant	50	7
	Mixer 1, molding line	20 (materials of Class 1)	< 0.1
		100 (materials of Class 2)	44 [2]
		150 (materials of Class 3)	44 [2]
	AAF Bay 3	20 (materials of Class 1)	6.3 [3]
		100 (materials of Class 2)	6.3 [3]
		150 (materials of Class 3)	6.3 [3]

[1] Measuring interval every 3 years, next measurement in the 2021 CY
[2] Total organic carbon (Class 2 + Class 3)
[3] Total organic carbon (Class 1 + Class 2 + Class 3)

ENVIRONMENTAL FOCUS ON ENERGY

Sustainable management of energy resources is an essential principle at voestalpine.

>15%

By optimizing production processes and cascading the energy used, specific energy consumption at the Linz location has been reduced by more than 15% over the past 20 years.

At the Linz location, 75% of the electrical energy is generated by the company itself.

Reduce. Optimization of steam generation and thermal processes as well as reduced loss of compressed air

Reuse. Energetic utilization of co-products (gases generated during steel production)

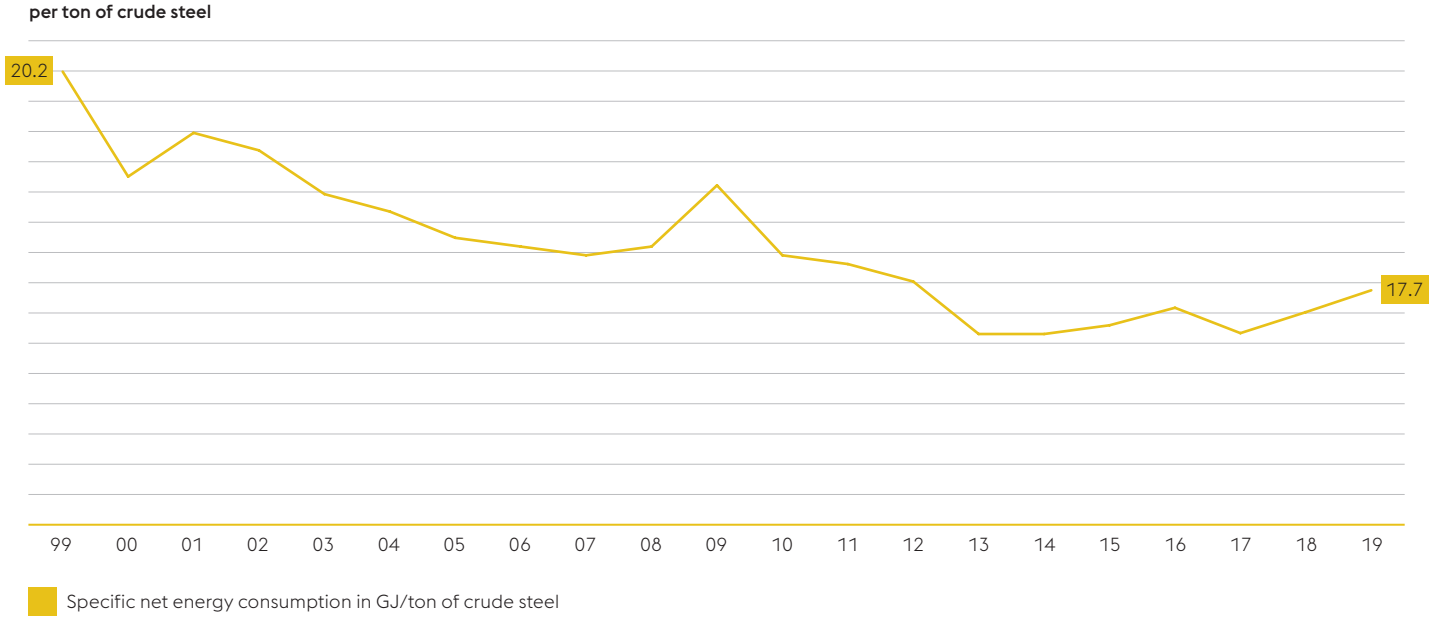
Repair. Energy recovery through blast furnace gas expansion turbine

Recycle. Injection of used plastics as a substitute for fossil fuels

In our efficient use of energy, we also focus on optimization of process gas utilization and energy recovery. Consistent energy monitoring and continuous plant system optimization for increased overall energy efficiency

The voestalpine foundry in Traisen ensures that materials and energy are used in an environmentally friendly and resource-conserving manner in all production cycles. We continually surmount new challenges and implement new standards in order to live up to our social responsibility.

SPECIFIC NET ENERGY CONSUMPTION



Specific energy consumption was substantially reduced over the past twenty years. Approximately 75% of the electric power consumed at the Linz location is generated on site.

The energy required in steelmaking is derived primarily from coal, coke, natural gas and electricity. Process gases (coke-oven gas, blast-furnace gas and converter gas) generated in the making of steel are used as energy-transfer media either directly or by efficiently converting the gases into heat or electrical energy in individual process steps.

The active contributions of each employee to environmental protection and energy savings are of great value. Many projects, large and small, are continually being planned and implemented.

The spectrum ranges from small projects to larger-scale, overreaching measures such as optimization of converter gas storage in the converter gas holder and optimization of boiler heat retention in Central Blower Station 2. These and many other measures saved more than 83,000 MWh during the 2019 calendar year.

ENVIRONMENTAL FOCUS ON WATER

In tune with nature.

90%

Total water consumption at the Linz location amounted in 2019 to roughly 558 million cubic meters, of which 89.6% – a total of 499 million cubic meters – was used as cooling water and returned to the Danube and Traun rivers without any pollution.

Reduce. Cooling process optimization

Reuse. Cooling towers, 95% circulation; LD3 water treatment

Repair. Seepage pits at the Linz location

Recycle. Reuse of cooling water in the recycling center, wet granulation

Water is one of the most important operating supplies. It is needed to cool plant systems and to create steam in iron and steel production.

A total of 558 million cubic meters of water were pumped from the Danube in the 2019 calendar year at the Linz location. This cooling water is channeled back into the Danube in compliance with the defined temperature limit values. Depending on the wastewater constituents, was either cleaned before returning it to the Danube or was piped to the municipal waste water treatment plant in Asten for biological treatment.

The sustainable management of water resources, particularly in compliance with local conditions, is an essential priority of voestalpine.

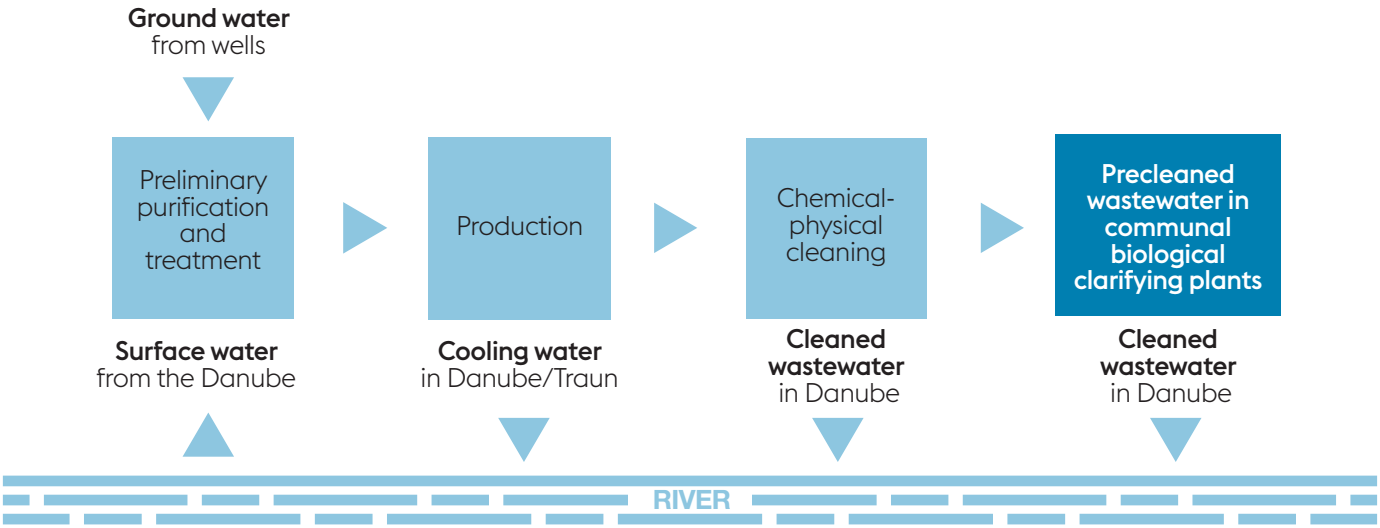
Functional water circulation is the foundation for an operational system. This is why voestalpine Giesserei Traisen strives to achieve sustainable resource management by linking water management with energy and environmental services under the premise of preserving flora and fauna.

The direct net fresh water consumption of voestalpine at the Linz location in the 2019 calendar year amounted to 7.7 million m^3 or 1.46 m^3/ton of crude steel.

The amount of water used has increased when compared with the previous year. This is due to the relining of Blast Furnace A at the Linz location and the associated long-term interruptions to operations in the year 2018.

The impact of production systems at the Linz location on local water systems is relatively small and does not lead to an increase in water scarcity in the region. This conclusion was reached during a Water Scarcity Footprint study conducted in 2018, which, in addition to the Linz location, also included an analysis of all operations and the Group's entire value chain (cradle to gate).

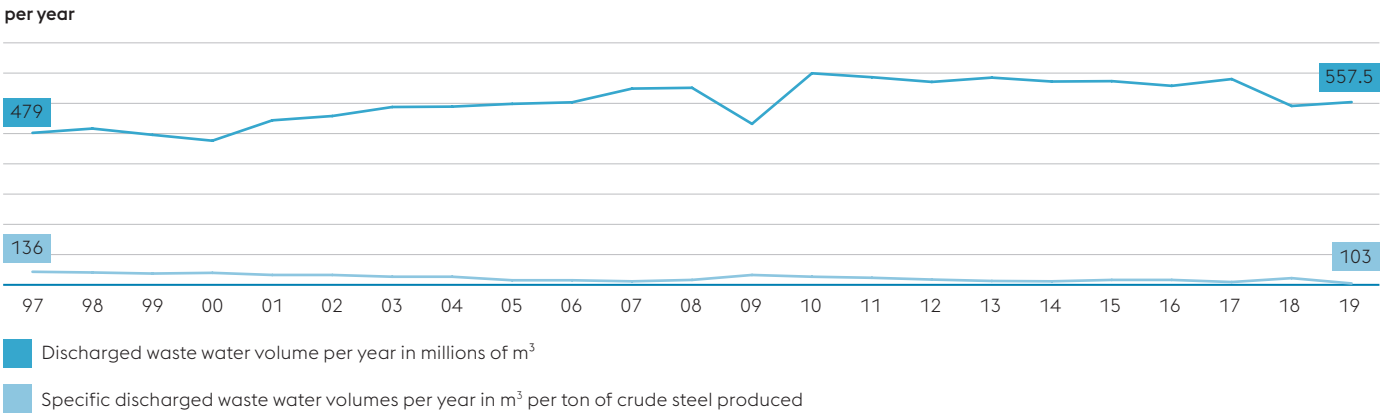
CAREFUL TREATMENT OF WATER AS A NATURAL RESOURCE IS REGARDED AS A FUNDAMENTAL PRIORITY AT voestalpine.



Trends in discharged waste water volumes

In the 2019 calendar year, the amount of discharged water amounted to 103 m^3 per ton of crude steel.

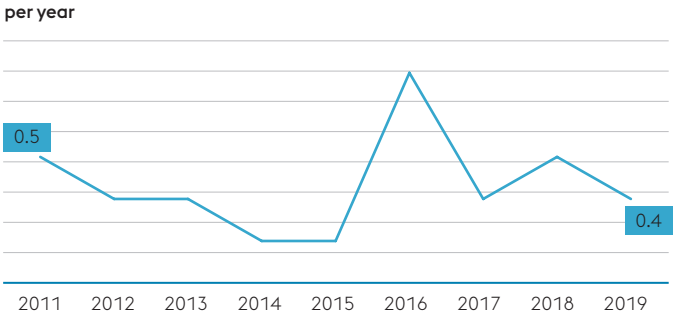
WATER DISCHARGE VOLUMES



Discharged waste water volume per year in millions of m^3

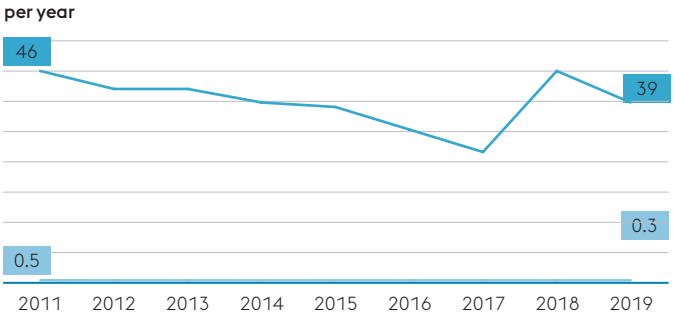
Specific discharged waste water volumes per year in m^3 per ton of crude steel produced

SPECIFIC DISCHARGE INTO DANUBE



Total heavy metals (Pb + Zn + Cr + Ni) in g/t of crude steel [1)]

DISCHARGE INTO MUNICIPAL WASTEWATER TREATMENT PLANT



CSB in g/t crude steel

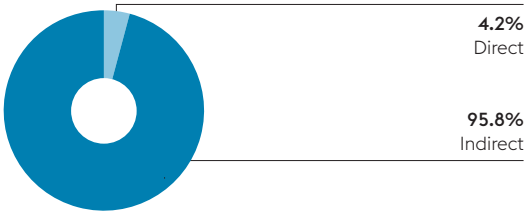
Total heavy metals (Pb + Zn + Cr + Ni) in g/t crude steel

Water footprint at the Linz location – a lifecycle assessment

Pursuant to ISO 14046, voestalpine takes a holistic view of the water systems across all production sites and implements the lifecycle assessment.

Calculation of the water scarcity footprint is carried out to assess the detailed contribution to water scarcity in the region. The assessment takes into account the hydro-geological properties at the production site. This lifecycle analysis showed that only roughly 4% of the water scarcity indicator surveyed was within the sphere of influence of the Linz location. Almost 96% is determined by upstream processes (primarily raw material supply).

WATER SCARCITY FOOTPRINT



[1)] minus initial load from Danube

ENVIRONMENTAL FOCUS ON WASTE

The objective is to reduce and reuse waste.

90%

Material recycling and the portion of re-used waste materials in total amount to a resource reutilization of 90% with respect to all waste processed off site and on site.

Reduce. Reduced external disposal of sludge from water treatment systems based on recovery of iron-rich fraction by flotation

Reuse. n. a.

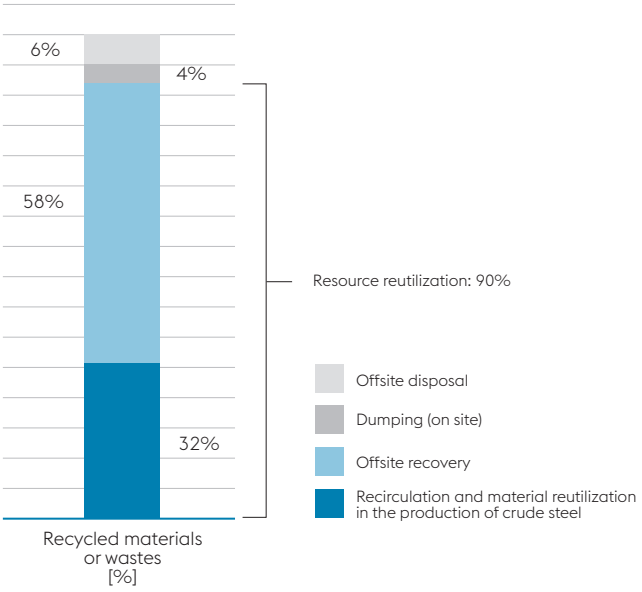
Repair. Use of waste oils as a substitute reducing agent

Recycle. Zinc recycling from steel mill dusts

Numerous waste and circulating materials are incurred during steelmaking and are returned to the production processes. This conserves natural raw materials. Waste and secondary raw materials are utilized in both in-house and external production process. Examples of this are scrap, end-of-life oils and waste greases. The following graphic provides an overview of utilized resources in the form of waste and recycled materials at the Linz location (not including scrap).

RESOURCE EFFICIENCY

Recyclable and waste materials incurred at the Linz location



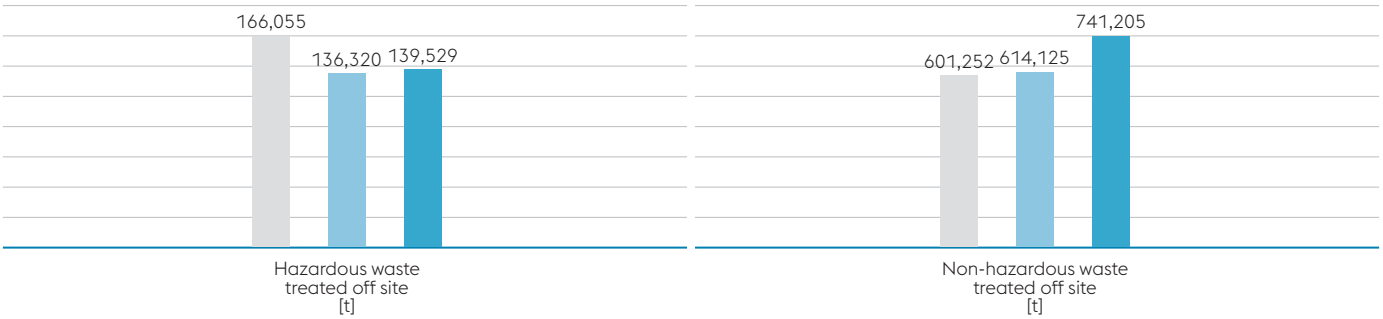
In the 2019 calendar year, roughly 32% of the recycled materials and waste incurred at the Linz location were re-utilized, thus increasing resource efficiency in production processes. (This value is increased to 54% when in-house scrap recycling is taken into account.)

Material recycling and the portion of re-used waste materials in total amount to a resource reutilization of 90% with respect to all waste processed off site and on site.

Sustainable policies to conserve natural resources play an essential role at the Traisen location. The aim of material management is to use the materials taken from nature as intensively as possible and to return them to production cycles.

WASTE

Waste treated off site



ENVIRONMENTAL FOCUS ON TRANSPORTS

More rail, less road.

58%

58.5% of the products are delivered by rail. In the case of raw materials, the figure is as high as 71% by rail, 29% by ship and less than 0.1% by truck (Linz location, 2019).

Reduce. Reduction of emissions through the use of sustainable and climate-friendly means of transport

Reuse. Closed-loop product, production scrap in the automotive industry: Use of free railway car capacities

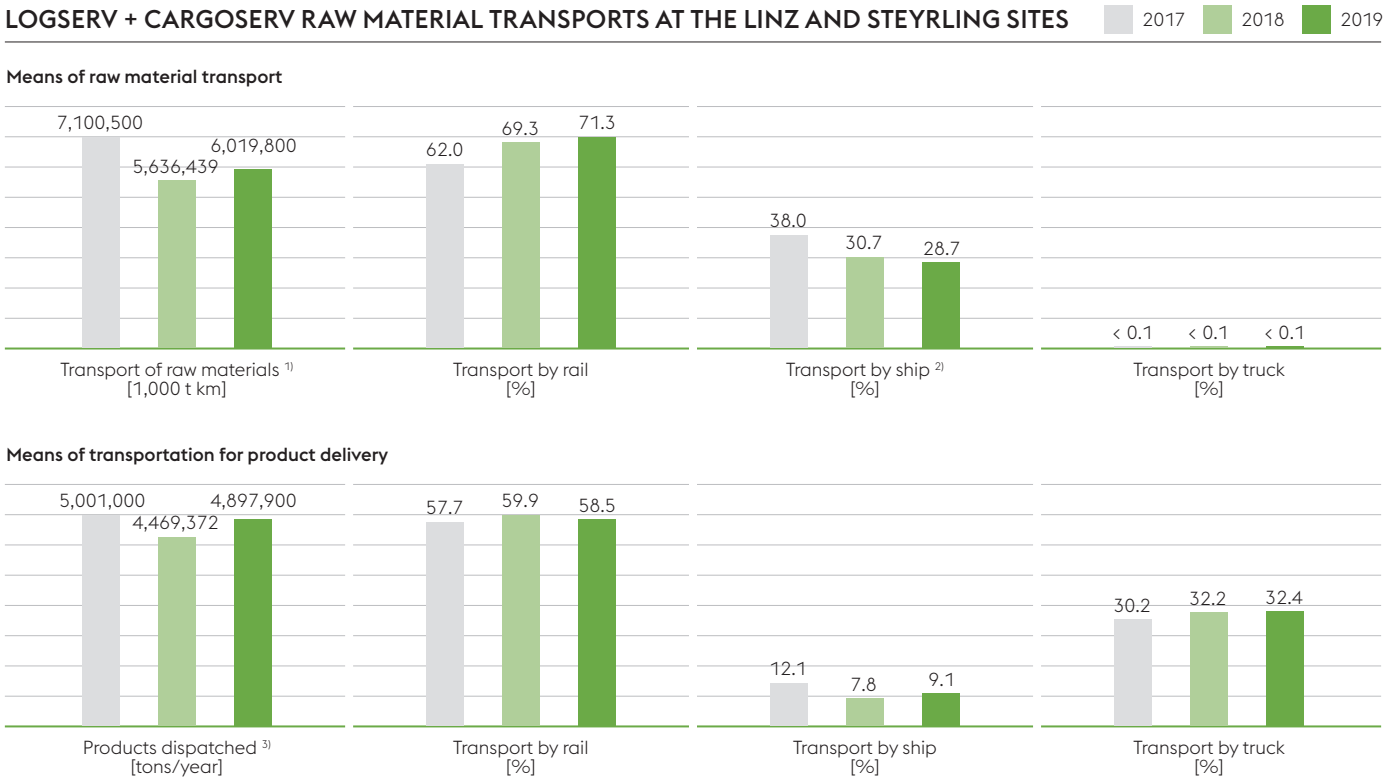
Repair. Shifting of transports from road to rail or ship

Recycle. n. a.

Material supply and product delivery are by railway, waterway or truck. It is important to us that our transports are as ecological as possible. Logistik Service GmbH and Cargo Service GmbH combine their transport possibilities, e.g. mobile systems, in order to avoid empty hauls and rely heavily on continual improvements in logistics systems, in technologies, implementation, methods, environmentally compatible driving techniques. Where possible, as many transports as possible are transferred from the roadway to the more environmentally compatible railway.

The figures for distribution of raw materials transported within Europe and distribution of product deliveries to the individual means of transport are as follows in the 2019 calendar year:

LOGSERV + CARGOSERV RAW MATERIAL TRANSPORTS AT THE LINZ AND STEYRLING SITES



The definition of emissions is difficult to impossible because of the large number of transport routes in use by the various means of transport (railway, ship, truck) with a wide variety of engine and vehicle technologies.

For this reason, no direct emission assessment is made for the transport of raw materials and for the delivery of products to voestalpine at the Linz location. Only the modal split is used as evaluation criteria for the assessment according to the respective transport routes.

Customers throughout the world are supplied by voestalpine Giesserei Traisen GmbH. In collaboration with a dynamic network of suppliers and customers, the challenge is to achieve sustainable development in each process stage of the supply chain. The geographical location and the infrastructure of the Traisen location provide only few possibilities for loading and unloading. Strategic decisions must yet be made with respect to the selection of suppliers, delivery windows and the efficient use of transport vehicles based on product and market requirements.

[1] Raw material deliveries in ton kilometers of ore, coal, scrap, lime, coke and coke breeze
[2] Raw material transport by inland waterway
[3] Products supplied from the Linz location by Logistik Service GmbH and Cargo Service GmbH

SAFETY TAKES HIGHEST PRIORITY
SEVESO PRODUCTION SYSTEMS

External emergency plan

Detailed information on the alarms and measures outside the works premises can be found in the external emergency plan issued by the fire department of the city of Linz. Required measures in the event of Danger Level III are contained in the internal emergency plan. The safety report complies with Section 84f of the Trade and Industrial Code dated 1994 and is available for review in the Environment Department of voestalpine Stahl GmbH.

Information to the public on safety measures and correct behavior in the event of industrial accidents pursuant to Section 14 of the Industrial Accident Act.

At the Linz production site, voestalpine Stahl GmbH operates plant systems that are subject to Section 8a of the Trade and Industrial Code of 1994 and the Industrial Accident Act and provides the following information on safety measures and proper behavior in the event of industrial accidents. Not every plant system failure is an industrial accident, which is defined as an event in which certain hazardous substances are released that pose a danger to humans or to the environment.

The precautions to be taken to prevent and limit industrial accidents are set forth in the Industrial Accident Act. Because of the comprehensive safety measures that have been taken for many years in production, the probability of you as a neighbor being affected by an industrial accident is very low. An industrial accident can only occur in the event that all the precautionary technical and organizational measures simultaneously fail. In the unlikely event that an industrial accident occurs in spite of all the safety measures that have been implemented, the following information provides advise on steps to take.

There are six relevant plant areas in the integrated metallurgical facility that could have an effect beyond the works premises in the unlikely event of an industrial accident:

- Coke oven batteries, including coking gas recovery, conveyor system and gasometer
- Tar extraction and crude benzene plant, including storage tank
- Blast furnaces, including gas cleaning, conveyor system and gasometer
- Converter operations, including converter gas cleaning, conveyor system and gasometer
- Unloading of fuel oil and distribution into piping and storage tanks
- Storage and distribution lines for calcium carbide in the steelmaking plant

Steam reformers A and B and air disintegration units 8 through 10 are operated by Linde Gas GmbH according to the Linde low-pressure technology and are safety-relevant systems installed on the works premises in Linz.

The substances contained in the systems of voestalpine Stahl GmbH and Linde Gas GmbH are subject to the provisions set forth in Section 8a of the Trade and Industrial Code dated 1994.

COMPREHENSIVE SAFETY MEASURES ARE IN PLACE TO ENSURE THAT THE RISK OF AN INDUSTRIAL ACCIDENT IS EXTREMELY LOW.

The authorities have been notified pursuant to Section 84d of the Trade and Industrial Code. Corresponding safety and security reports were submitted to the authority (Magistrate of the Provincial Capital of Linz, Office of the Provincial Government). The information is submitted to or updated at regular intervals and can be consulted there. This environmental report is also available at Central Works Security Post A.

The following safety aspects are taken into account in the safety report submitted:

- Processes and reactions occur in closed systems.
- Hazardous substances are replaced where possible and remaining amounts are reduced to the specifically required volumes.
- The avoidance of waste takes a high priority in the planning and operation of plants.
- Safety systems generally consist of multiple stages.
- The plants are operated, maintained and tested by qualified and regularly re-trained personnel.

The plants are regularly tested in accordance with legal regulations by in-house and external experts (such as TÜV). Stringent safety regulations are assessed by the authorities for all designated plant systems. As a result of these regulations and precautions taken by the operators, there has never been an accident at the works since it has existed that would have posed any hazard to the population. In spite of the high safety standards, then risk of accidents can never be completely eliminated. Even though the probability of an accident with effects beyond the works premises is very low, voestalpine Stahl GmbH nevertheless takes this opportunity to inform the public in a precautionary manner of possible effects and measures to take in the event of an accident.

Information on possibly hazardous plant systems and production activities

COKE OVEN BATTERIES, INCLUDING COKING GAS RECOVERY, CONVEYOR SYSTEM AND GASOMETER

The coke required in the blast furnace is produced in the coking plant. For this purpose, finely ground coal is heated in coking ovens that are arranged in batteries each containing a total of 40 ovens. The coal is heated for approximately 18 hours to a temperature of roughly 1,250 °C. The coal is converted into coke, which means that it is baked until it has released all its gaseous constituents. These gaseous constituents make up the coke gas that is cleaned to a high degree in the coking plant and is then used as a fuel gas in the power plant and other furnace systems throughout the steel works. A gasometer and a network of gas lines store the gas until it is used. The system of course is closed. Coke gas contains approximately 7% carbon monoxide and is, as are all flammable gases, combustible with certain amounts of air.

TAR EXTRACTION AND CRUDE BENZENE PLANT, INCLUDING STORAGE TANK

Crude tar and crude benzene occur as co-products during the high-grade cleaning of the coke gas. Crude benzene is cleaned out of the coke gas by means of wash oil in two scrubbers. It is then removed by means of distillation from the circulating wash oil and stored intermediately in a 2,000 m^3 tank before it is delivered to purchasers. The crude benzene storage tank is suctioned out. The filling process is by means of a gas displacement device to ensure that no emissions can be released. Crude benzene contains up to 85% benzene. The fumes are, as with all other flammable liquids, combustible when mixed with certain amount of air. The crude tar condenses with condensation from the crude coke gas and is separated in tar separators from the condensate. Crude tar is pumped through the intermediate tar containers into the crude tar tanks. The individual parts of the tar separator units are equipped with a liquid-tight bucket system to prevent any emission to the environment. The crude tar and crude benzene are contained in tank railcars until they are used in the closed systems of production lines.

BLAST FURNACES, INCLUDING GAS CLEANING, CONVEYOR SYSTEM AND GASOMETER

Blast furnace gas is a by-product and co-product that occurs during the production of hot metal in the blast furnace. This blast furnace gas is cleaned to a high degree, removing all the dusts, and is used as a fuel gas in the blast furnace itself, the power plant, in the coking plant and other furnace systems throughout the steel works. A gasometer and a network of gas lines store the gas until it is used. The entire network is a closed system. Blast furnace gas contains approximately 25% carbon monoxide and is, as are all flammable gases, combustible with certain amounts of air.

CONVERTER OPERATIONS, INCLUDING CONVERTER GAS CLEANING, CONVEYOR SYSTEM AND GASOMETER

Steel chemically differs from iron primarily in its lower carbon content. The carbon contained in the crude iron produced in the blast furnace is removed from the steel melt by means of the oxygen top-blowing process during steelmaking in the LD steel plant. This process yields the so-called converter gas that is subjected to a high-grade cleaning process in electric filters and then added in a controlled manner to the top gas in order to increase its calorific value. A gasometer and a network of gas lines store the gas until it is used. The system of course is closed. Converter gas contains approximately 60% carbon monoxide and is, as are all flammable gases, combustible with certain amounts of air.

AIR DISINTEGRATION PLANT

Air is divided in air separation units (8 through 10) belonging to Linde Gas GmbH by means of rectification into nitrogen, oxygen and argon constituents. The generated gases are either piped in gaseous form to consumers in the works of voestalpine Stahl GmbH or to the Chemiepark or they are liquefied, stored at super-cooled temperatures and filled into tank cars. In addition to the air as a raw material and different energies, hydrogen is also required in argon fine cleaning system (8) of the air separation unit. This hydrogen is supplied by the hydrogen production facility at voestalpine.

HYDROGEN PRODUCTION SYSTEM COMPLEX

Natural gas is converted through chemical reactions into hydrogen in the steam reformers (STR A and B) of Linde Gas GmbH. The gaseous hydrogen is used in-house and is supplied to voestalpine Stahl GmbH and Chemiepark in Linz. External customer supply is provided on trailer units.

UNLOADING OF FUEL OIL AND DISTRIBUTION INTO PIPING AND STORAGE TANKS

Light fuel oil is delivered in tank trucks and pumped into the storage tanks at the power station of voestalpine Stahl GmbH. The light fuel oil is pumped through piping from the storage tank to block 7 of the power plant of voestalpine Stahl GmbH. The light fuel oil is used in the event that other fuels, such as the usually used metallurgical gases and natural gas, are temporarily not available. In order to ensure that the light fuel oil is ready for use, it is continuously circulated in piping between the storage tank and the power station in order to maintain the required temperature and pressure.

STORAGE AND DISTRIBUTION LINES FOR CALCIUM CARBIDE IN THE STEELMAKING PLANT

The hot metal is combined with scrap and additives in three converters in the LD steelmaking plant. The mixture is converted in an oxygen blowing process at approximately 1,650 °C to crude steel. Further treatment takes place in the ladle furnace and in the vacuum degassing unit. The molten steel is cast in the continuous caster into slabs.

Calcium carbide is used in the steelmaking plant to remove sulfur (desulfurization) and oxygen (deoxidation) from the hot metal.

A high standard of safety is guaranteed by continuous monitoring by plant personnel, regular tests and the safety precautions described above. Should an industrial accident occur, however, in spite of all the technical and organizational preparation made to prevent such an incident, the emission of poisonous substances still poses a possible danger in addition to explosion and fire. In such an instance, affects to human health and the natural environment outside the works premises, especially caused by gas or fumes that may be carried over distances, cannot be excluded.

Information on the types of dangers and their possible consequences

The following substances when emitted into the atmosphere pose a potential danger beyond the premises of the steel works.

CARBON MONOXIDE

Carbon monoxide is contained in

- Coking plant gas (approx. 7 volume percent CO)
- Blast furnace gas (approx. 25 volume percent CO)
- Converter gas (approx. 60 volume percent CO)

The listed process gases are easily combustible and are poisonous because of their CO content. When emitted to the atmosphere, these gases are diluted with atmospheric air to differing degrees that lead to various symptoms depending on the respective concentrations. These symptoms may include headache, dizziness, sickness, sleepiness, asphyxiation, unconsciousness and respiratory paralysis. Patients must be exposed to fresh air, must rest comfortably and tight clothing must be loosened. In the event of apnea, resuscitation is required to introduce oxygen to the brain. Call a doctor. Keep patients warm. In the event of threatening unconsciousness, place the patient on his or her side and transport in stable position.

BENZENE

Patients must be exposed to fresh air, must rest comfortably and tight clothing must be loosened. Resuscitate immediately in the event of apnea. Remove contaminated clothing immediately. Rinse contaminated skin sufficiently with water. Rinse contaminated eyes adequately with water for ten to fifteen minutes. Call a doctor. Keep patients warm. In the event of threatening unconsciousness, place the patient on his or her side and transport in stable position.

ATMOSPHERIC GASES AND HYDROGEN

Because of their volumes and properties (both not poisonous) and distances to other substances, the hazardous substances (oxygen, nitrogen, argon and hydrogen) contained in the air separation and hydrogen production units are not potentially hazardous outside the premises of voestalpine Stahl GmbH.

CALCIUM CARBIDE

The carbide mixture in the hopper contains essential constituents as follows:

Calcium carbide (CaC_2)	63.1%–72.3%
Coal, including volatile constituents	5.5%
Carbon content	32.59%–19.14%
Additional fluxes	3.0%

Calcium carbide is not a flammable substance. Acetylene develops in the presence of moisture and mixes with air to form an explosive gas atmosphere and calcium hydroxide. The humidity from the air is enough to begin the reaction. Under atmospheric conditions, one ton of calcium carbide of technical quality (roughly 68% CaC_2) in reaction with water yields roughly 258 standard cubic meters of acetylene gas.

MEASURES

The measures taken to eliminate accidents and limit the consequences of an accident are regulated in the emergency plan of voestalpine Stahl GmbH. This plan is regularly updated in collaboration with the Municipal Offices of the Provincial Capital City of Linz and the fire department of Linz pursuant to the pertinent official regulations of the provincial capital of Linz.

The measures to be taken in the event of an incident are obligatory. The safety report of voestalpine Stahl GmbH is submitted on a regular basis to the authorities. The report is an integral part of the tests carried out by the responsible authorities that also serve to meet requirements and adaptations pursuant to Section 8a of the Trade and Industrial Code dated 1994.

With respect to the air separation unit, a safety report has also be submitted by Linde Gas GmbH.

EXTERNAL EMERGENCY PLAN

Detailed information on the alarms and measures outside the works premises can be found in the external emergency plan issued by the fire department of the city of Linz. Required measures in the event of Danger Level III are contained in the internal emergency plan. Notification procedures (excerpt from the emergency plan of voestalpine Stahl GmbH). The following measures have been determined in accordance with the emergency plan of voestalpine Stahl GmbH:

- Works fire department responds to the scene with all fire trucks and breathing apparatus vehicle
- Fire department of the City of Linz responds to the scene
- Establishment of a command center on site managed by City of Linz fire department
- Measurements taken to eliminate dangers such as cordoning off areas by the gas search troop, evacuation of the cordoned-off area, radio announcements

Warning

The public is warned by means of sirens in the event of an extraordinary incident. Industrial accidents on the premises of are voestalpine Stahl GmbH and steps to take by the public are announced on public radio and television stations. This procedure and the type of reports required by the authorities are defined in the in-house emergency plan submitted to the authorities.

Note

Please do not call emergency telephone numbers without any important reason. This will ensure that the lines remain open for actual emergencies.

Contact numbers for inquiries and further information

Central office: T. +43/50304/15-5077 or +43/50304/15-2629
Environmental Department: T. +43/50304/15-5783
Occupational Safety Department: T. +43/50304/15-9806
Linde Gas GmbH: T. +43/50/4273-1616

Link to Environmental Report on the Internet:

www.voestalpine.com/group/en/group/environment/environmental-management

OVERVIEW OF POTENTIAL HAZARDS AND COMPREHENSIVE EMERGENCY PLANS FOR THE FACTORY PREMISES

ADDITIONAL ENVIRONMENTAL IMPACT

PROTECTING OUR NEIGHBORS FROM NOISE AND OBNOXIOUS ODORS IS ONE OF OUR HIGHEST PRIORITIES

RADIATION

All raw materials at the Linz and Traisen locations are inspected thoroughly for radiation by highly sensitive devices before they are delivered to production facilities. Radioactive tests are conducted on all heats of the intermediate hot-metal product to exclude any risk.

NOISE

The works premises in Linz has been divided into 16 contingency sections according to the environmental impact assessment (L6). Higher noise loads of individual surface areas can be balanced by surface areas that do not reach permissible noise levels. From the perspective of neighborhood protection, limitation of noise emissions is important with respect to on-site expansion. In the event any complaints from residents surrounding the Linz, Steyrling and Traisen sites, a root cause analysis is carried out and, if necessary, appropriate measures are initiated and implemented.

ODOR

Based on measures taken in the past to prevent and minimize emissions at the Linz location, a favorable level has now been achieved to the effect that no adverse odors are produced.

VIBRATIONS

Lime-containing rock at the Steyrling location is mined from the walls of an open pit by means of conventional blasting. This can cause ground vibration. Blasting activities are announced to neighboring parties ahead of time.

Production and transport-related vibrations at the Traisen location are transmitted through the soil as a result of the geological and geographical conditions. Technological and organizational measures are implemented in order to avoid vibrations during operation of various production systems and processing.

At every production site, voestalpine treats local ecosystems responsibly and actively contributes to the promotion of biodiversity.

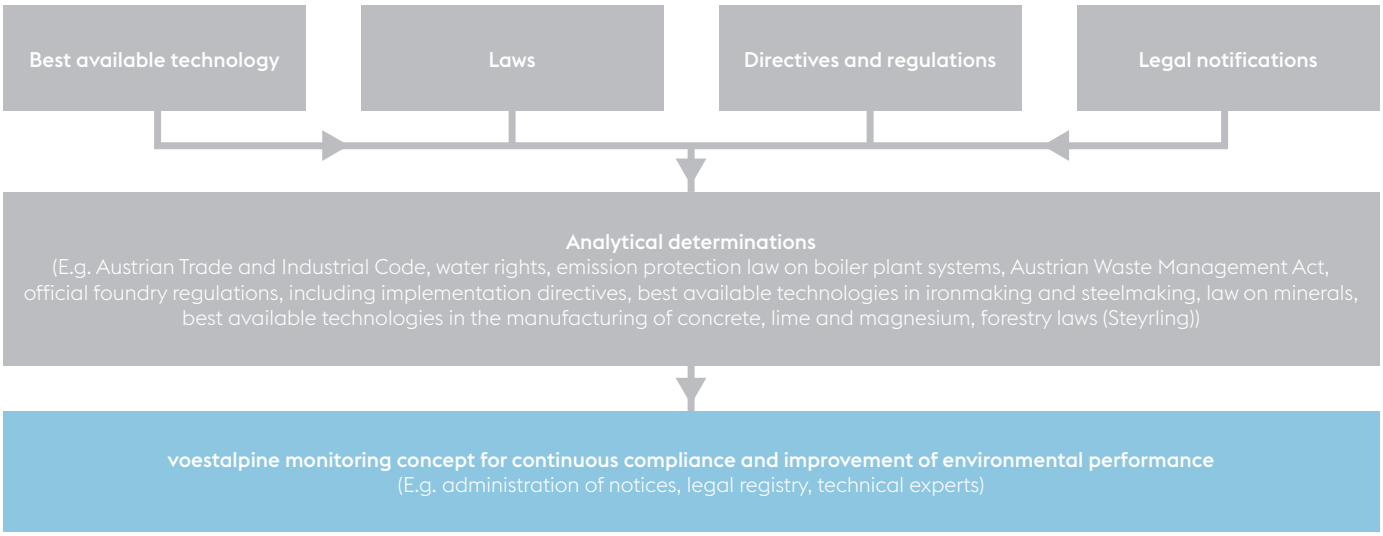
BIODIVERSITY

At the Linz location, for example, flowering areas have been created on a surface area of roughly 20,000 square meters. The wildflower meadow provides many insect species, especially wild bees, with an additional long-term food source. Insect hotels also offer a breeding location for rare species. A project aimed at the management of several bee colonies on site is currently in the planning stage. Several voestalpine employees with many years of beekeeping experience have provided major support for this project.

LEGAL MANAGEMENT OF ENVIRONMENTAL ASPECTS

The Linz, Steyrling and Traisen sites of voestalpine operate a certified/validated environmental management system pursuant to ISO 14001 and EMAS. As part of the integrated management system, concrete objectives have been identified, a program has been in place to implement measures and regularly audit progress. The same applies to our legal compliance policies that ensure company adherence to all applicable legal regulations. Any non-consensual operation is reported to the authorities, and appropriate corrective measures are taken. Specialized environmental skills and expertise have been made possible only by creating a high level of environmental awareness among the employees throughout the Group.

COMPLIANCE WITH ENVIRONMENTAL REGULATIONS



INFORMATION, CONTACT AND ABOUT US

Environmental report

The next consolidated Environmental Report will be submitted for review in October 2022 and published thereafter. In addition, an updated version is created, externally reviewed and published on an annual basis.

Certified environmental experts

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Lloyd's Register

ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES

Lloyd's Register Quality Assurance Ltd., with EMAS environmental verifier registration number AT-V-0022 and accredited for the scope:

Integrated mill of voestalpine Stahl GmbH and their subsidiaries at site Linz as well as extraction and production of lime at site Steyrling and production of steel castings at site Traisen.
(separate scopes see appendix)
NACE Code: see appendix

declares to have verified:

voestalpine Stahl GmbH, voestalpine Giesserei Linz GmbH, voestalpine Camtec GmbH, Cargo Service GmbH, Logistik Service GmbH, voestalpine Grobblech GmbH, voestalpine Automotive Components Linz GmbH, voestalpine Standortservice GmbH, voestalpine Steel & Service Center GmbH, voestalpine Giesserei Traisen GmbH
Linz, Steyrling, Traisen
Austria

registration number AT-000216
meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community Eco-Management and Audit Scheme (EMAS) amended by commission regulation (EU) 2017/1505 and 2018/2026.

By signing this declaration, LRQA declares that:

- the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,
- the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,
- the data and information presented in the Environmental Statement of the organisation reflect a reliable, credible and correct image of all the organisation's activities within the scope mentioned in the environmental statement

This document is not equivalent to EMAS registration. EMAS registration can only be granted by a Competent Body under Regulation (EC) No 1221/2009. This document shall not be used as a stand-alone piece of public communication.

LRQA Ref No: VNA0005063-04

Date of verification:	22 October 2020
Verification Expiry:	21 October 2023
Date of validation:	22 October 2020
Validation Expiry:	21 October 2021

DI Harald Ketzer, Lead Verifier
Lloyd's Register EMEA, Niederlassung Wien
1010 Wien, Opernring 1/R/741-744, Österreich
on behalf of Lloyd's Register Quality Assurance Limited
Akkreditierungsnummer: AT-V-0022

Lloyd's Register EMEA Niederlassung Wien, Opernring 1/R/741-744, 1010 Wien, Österreich, FN 239257 Z
Die Gültigkeitserklärung gilt zusammen mit der Validierung als Nachweis über die Verifizierung und Validierung. Sie werden bei der Beantragung auf Eintrag bei der zuständigen Stelle nach Artikel 3 der Verordnung benötigt. Der Text dieser Erklärung muss vollständig in der Umwelterklärung der Firma abgedruckt werden.

EMAS
Geprüftes Umweltmanagement
REG.NO. AT- 000216

The Linz, Steyrling and Traisen locations have established independent environmental management systems. The public is informed of the environmental measures taken at these locations in compliance with the community systems for environmental management and environmental impact assessment.

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voestalpine
ONE STEP AHEAD.