# 2017 ENVIRONMENTAL REPORT

**Updated environmental report for the Linz and Steyrling locations**

**Christoph Angermayer,** Deputy Head of Environment

voestalpine
ONE STEP AHEAD.

www.voestalpine.com

# DATA, FACTS AND IMPORTANT INFORMATION ON ENVIRONMENTAL TOPICS

The content of the updated 2017 Environmental Report comply with requirements of the EMAS III Directive and refer to the validated locations in Linz and Steyrling and the respective companies voestalpine Stahl GmbH, voestalpine Grobblech GmbH, voestalpine Giesserei Linz GmbH, voestalpine Camtec GmbH (former non-ferrous metal foundry of voestalpine Giesserei became a new company on 1 July 2017 and has since been called voestalpine Camtec GmbH), voestalpine Steel & Service Center GmbH, voestalpine Standortservice GmbH, Logistik Service GmbH, Cargo Service GmbH and voestalpine Automotive Components Linz GmbH.

# CONTENT

# IMPLEMENTED ENVIRONMENTAL MEASURES

## Excerpt of environmental measures implemented in the 2016/17 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 indicate measures already implemented in previous programs and document the objectives newly defined in the current 2017/18 environmental program. Further individual measures have been developed and implemented in the respective companies.

| Company | Target | Measure | Figure | Deadlines |
|---|---|---|---|---|
| voestalpine Stahl GmbH | Reduced sodium hydroxide consumption while maintaining the same level of coking plant emissions | Optimization of parameters, e.g. ammonia, in stripping-column dosing | Sodium hydroxide consumption reduced by roughly 144 tons/year | 31 May 2016 |
| voestalpine Stahl GmbH | Dust reduction in burdening system of Blast Furnace 6 | Installation of a new conveying system (drainage runs, weighing hoppers, conveyor belts) as well as structural measures in the area of the hoppers | Reduction of roughly 498 kg/year of diffuse dust emissions | 30 Sep. 2016 |
| voestalpine Stahl GmbH | R&D project for increased recycling of slags from the steelmaking plant | Testing and creation of a strategy to identify further steps | Strategy for reclamation of metal fraction and Cr-reduced mineral fraction in metallurgical slag | 31 Mar. 2017 |
| Steyrling location | Reduction of burned lime fines in lump lime | Installation of sifters for loading lump lime on railcars for the steelmaking plant in Linz | Reduction of roughly 4000 tons/year of burned lime fines (< 2 mm) | 31 Mar. 2017 |
| voestalpine Grobblech GmbH | Simplification and optimization of packaging for clad plates | Replacement of packaging paper with polyethylene-coated paper, reduction of packing wood and films, supply of large orders with kraft paper covers | Packaging materials reduced by approximately 64% | 30 Sep. 2016 |
| Logistik Service GmbH | Reduced consumption of diesel fuel on the works railway | Purchase of two new diesel locomotives with start/stop technology (903.07, 903.08) | Diesel consumption savings of roughly 15% amounts to a reduction of approximately 2 liters/hour, or 16,000 liters of diesel savings per locomotive and year | 31 Mar. 2017 |
| voestalpine Standortservice GmbH | Works fire departmed: Reduced consumption of diesel fuel on the works railway | Procurement of spares: three chain saws | Pollutant emissions reduced by 25–30% | 31 Mar. 2017 |
| voestalpine Automotive Components Linz GmbH | LED lighting in production facility 1 | Conversion of lighting system in the buildings from mercury vapor to LED lighting | Electricity consumption reduced by 798 MWh/year | 31 Dec. 2016 |

# 2017/18 ENVIRONMENTAL PROGRAM – MEASURES BEING IMPLEMENTED

| Company | Target | Measure | Figure | Deadlines | Status |
|---|---|---|---|---|---|
| voestalpine Stahl GmbH | Coking plant: Soil 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/m³ | 31 Dec. 2022 | Being implemented |
| voestalpine Stahl GmbH | Minimization of (environmental) effects in the event of flooding | Optimization of flood protection | Flood protection increased to roughly HW 1000 | 31 Dec. 2020 | |
| voestalpine Stahl GmbH | Reduction of carbon organic emissions in the coal pulverization and drying system | Installation of a post-combustion system in the coal pulverization and drying system | Carbon organic emissions reduced to below roughly 50 mg/Nm³ | 31 Dec. 2017 | |
| voestalpine Giesserei Linz GmbH | Plant optimization and increased resource efficiency | Sand treatment facility optimized by replacing magnetic cutters with magnetic drums | Further increase of cutting performance by roughly 100 kg/h (savings through purchase of chromite sand) | Verification management prolonged until 31 Dec. 2017 | |
| Logistik Service GmbH | Reduced electricity consumption | Convert lighting system to LED technology Operations-based switching and dimming of lighting (new railway system installations in the area of the blast furnaces and steelmaking plant) | Savings of roughly 2,000 MWh/year | 31 Dec. 2017 | |
| Cargo Service GmbH | Reduced energy consumption | New strategy for more ecological operation of engines during railway transport The scheduled speed of trains in which change was possible was reduced from 100 to 90 km/h. | Reduced power consumption by 35 MWh/year | Current implementation continued until 31 Mar. 2018 | |
| voestalpine Steel & Service Center GmbH | Number of unscheduled truck transports reduced in pre-material supply to SSC subsidiary in Romania | Avoidance of truck transports through improvements in production logistics | Unscheduled truck transports reduced by roughly 50 % | 31 Mar. 2018 | |

# 2017/18 ENVIRONMENTAL PROGRAM – NEW MEASURES

| Company | Target | Measure | Figure | Deadlines | Status |
|---|---|---|---|---|---|
| voestalpine Stahl GmbH | Optimized dust detection strategy and dust separation in the burdening system of blast furnace A | Installation of a new exhaust and filter system | Reduction of roughly 3 tons/year of diffuse dust emissions | 31 Dec. 2018 | New measure |
| voestalpine Stahl GmbH | Improved monitoring of dust separation by joining dedusting lines in the LD3 steelmaking plant | Integration of two smaller dedusting systems in the continuously monitored secondary dedusting system 2.2 | Expansion of the continuous dust emission monitoring system | 31 Mar. 2018 | |
| 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 | Cooling water reduced by roughly 150,000 cubic meters per year (roughly 4% of the annual discharge volume in hot-dip galvanizing line No.1 | 31 Jan. 2019 | |
| voestalpine Stahl GmbH | Reduction of vapor pressure in RH1 and RH2 | Implementation of ball valves and implementation of special control valves Higher level of safety | Reduction of steam consumption by approx. 11,000 tons/year | 31 Mar. 2018 | |
| Steyrling location | Increased efficiency in resource utilization through reduction of dead rock | Procurement of a mobile screening unit and post-treatment of dead rock | Reduction of dead rock by roughly 4,500 tons/year through reuse of sifted-out limestone in production operations | 31 Mar. 2019 | |
| voestalpine Grobblech GmbH | Energy savings in heat-treating furnace (D20) | Optimization and cleaning of regenerator, optimization of offgas stack valve regulation and lambda optimization of all burners, revamp of burner control system | Reduced energy consumption by roughly 10% (MWh/t) | 31 Aug. 2017 | |
| voestalpine Giesserei Linz GmbH | Minimized dumping of fireclay scrap | External recycling for the manufacture of refractory spraying mixture | External recycling of roughly 15 tons/year of fireclay scrap | 31 Dec. 2017 | |
| voestalpine Giesserei Linz GmbH | Minimized dumping of sand residues | Evaluation of external recycling of sand residues in collaboration with several customers | External recycling of roughly 400–500 tons/year of sand residues | 31 Dec. 2018 | |
| voestalpine Camtec GmbH | Reduction of chemical consumption | Conversion of the marking system from etching to laser film | Chemical consumption reduced by 90% using the new marking method | 31 Mar. 2018 | |
| voestalpine Steel & Service Center GmbH | Reduction of work-based travel between the Industriezeile location and the steelworks | Reorganization of production system operator teams in the interest of reduced travel between the two locations | Savings of roughly 10,000 km per year and thus approximately 750 liters of diesel fuel | 30 June 2017 | |
| voestalpine Standortservice GmbH | Optimization of railway lighting systems | Track filed lighting systems upgraded to LED technology (new installation in railway systems in the area of the scrap yard and cold-rolling mill | Reduced electrical consumption in a portion of track field lighting by roughly 25% | 31 Mar. 2018 | |
| Logistik Service GmbH | Savings of diesel fuel in road-based vehicles required in production operations | Implementation of two new slag transporters | Savings of approx. 36,000 liters of diesel per year | 31 Jan. 2018 | |
| voestalpine Automotive Components Linz GmbH | Reduced water consumption in punching line No. 1 | Conversion of main hydraulic unit from water to air cooling | Reduction from roughly 800 to 0 cubic meters of water per month (annual savings of 9,600 cubic meters) | 1 May 2017 | |

# PRODUCTION AND ENERGY FIGURES

## Linz location

| Production volume | Unit | 2015 CY | 2016 CY |
|---|---|---|---|
| Crude steel (CS) | in million tons | 5.40 | 5.29 |

| Products | Unit | 2015 CY | 2016 CY |
|---|---|---|---|
| Hot-rolled strip (non-slit) | in million tons | 1.1 | 1.1 |
| Cold-rolled strip and electrical steel | | 1.0 | 1.0 |
| Galvanized strip | | 2.2 | 2.3 |
| Organic-coated strip | | 0.2 | 0.2 |
| Heavy plates | | 0.7 | 0.7 |
| Blast furnace slag | | 1.2 | 1.3 |
| Cast parts | t | 8,906 | 7,444 |
| Laser-welded blanks | | 117,890 | 129,496 |
| Cut shapes and shear-cut sheets | | 1,808,480 | 1,751,415 |

| Energy | Unit | 2015 CY | 2016 CY |
|---|---|---|---|
| Natural gas | TWh | 3.0 | 2.8 |
| Heavy oil [1] | in million tons | 0.023 | 0.000 |
| Electric power (outside source) | TWh | 0.40 | 0.55 |

## Steyrling location

| Products | Unit | 2015 CY | 2016 CY |
|---|---|---|---|
| Burned lime (BL) | in million tons | 0.381 | 0.373 |
| Crude lime | | 1.168 | 1.161 |
| Armor stones | | 0.006 | 0.007 |
| Limestone split (non-burned) | | 0.508 | 0.515 |

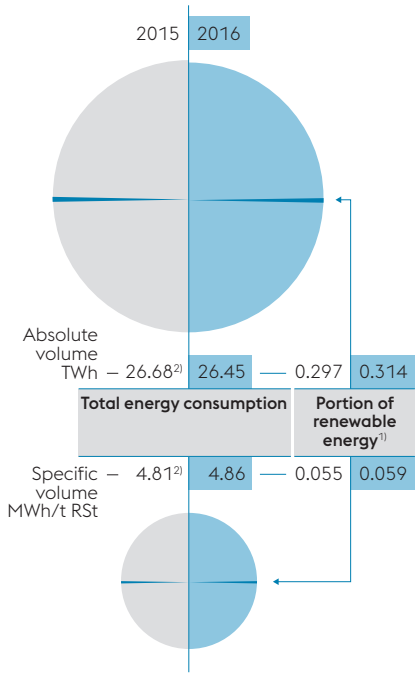
| Energy | Unit | 2015 CY | 2016 CY |
|---|---|---|---|
| Natural gas | GWh | 370 | 362 |
| Electric power | | 17 | 16 |

[1] Used as reducing agent in blast furnace

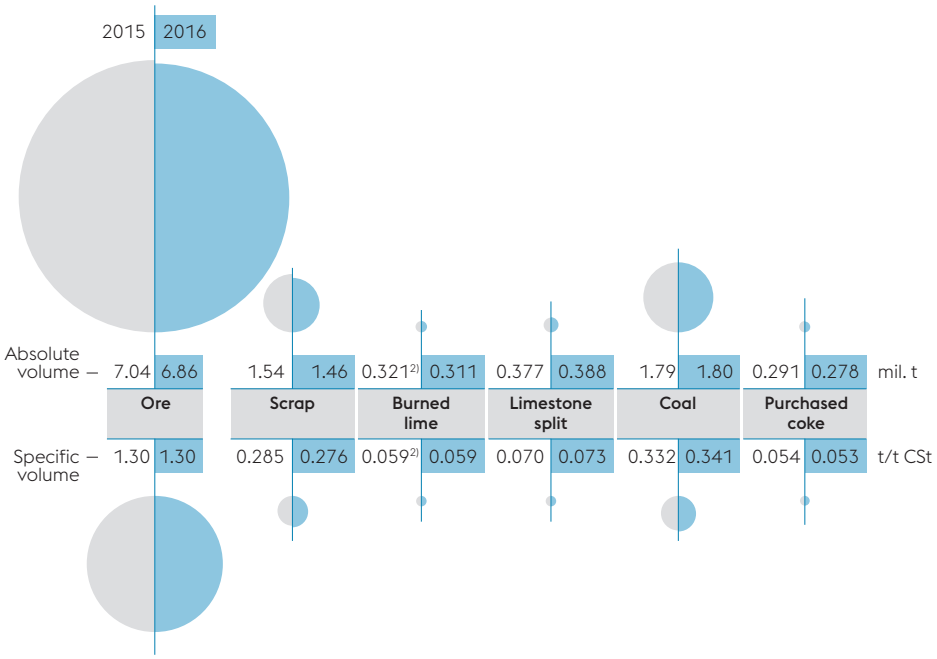
# CORE INDICATORS

## Linz location

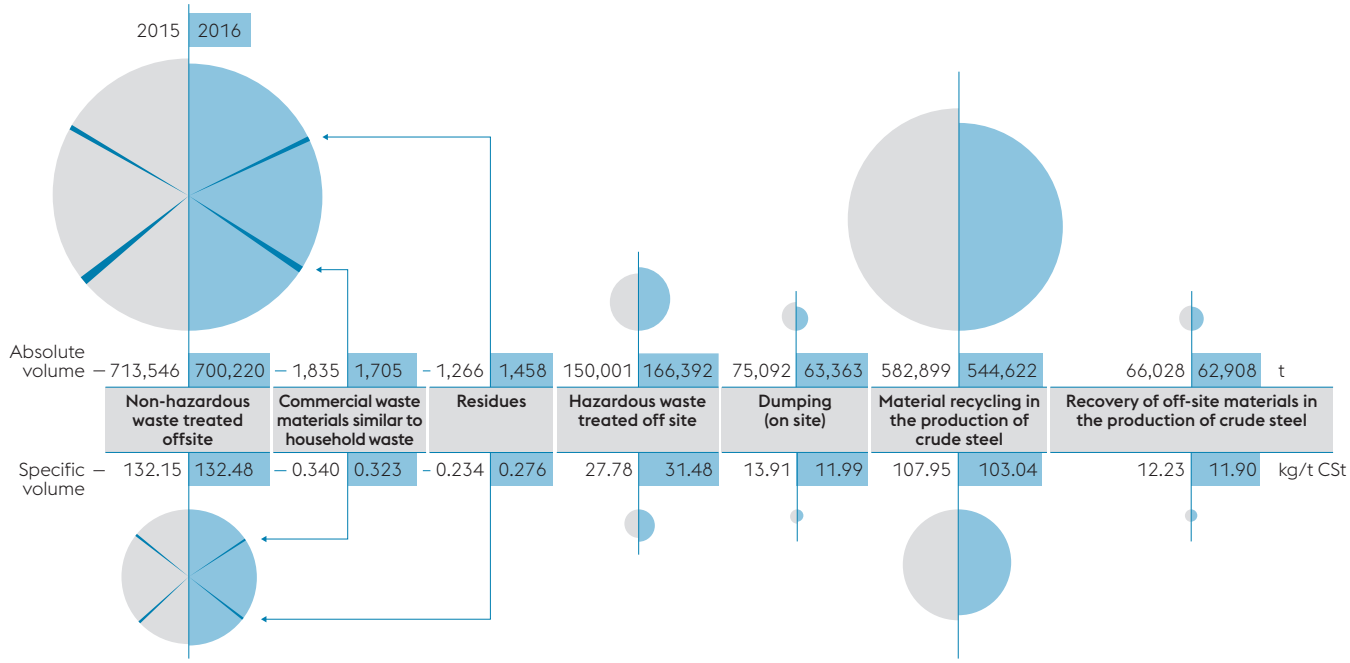
### Energy efficiency




### Material efficiency




### Waste management

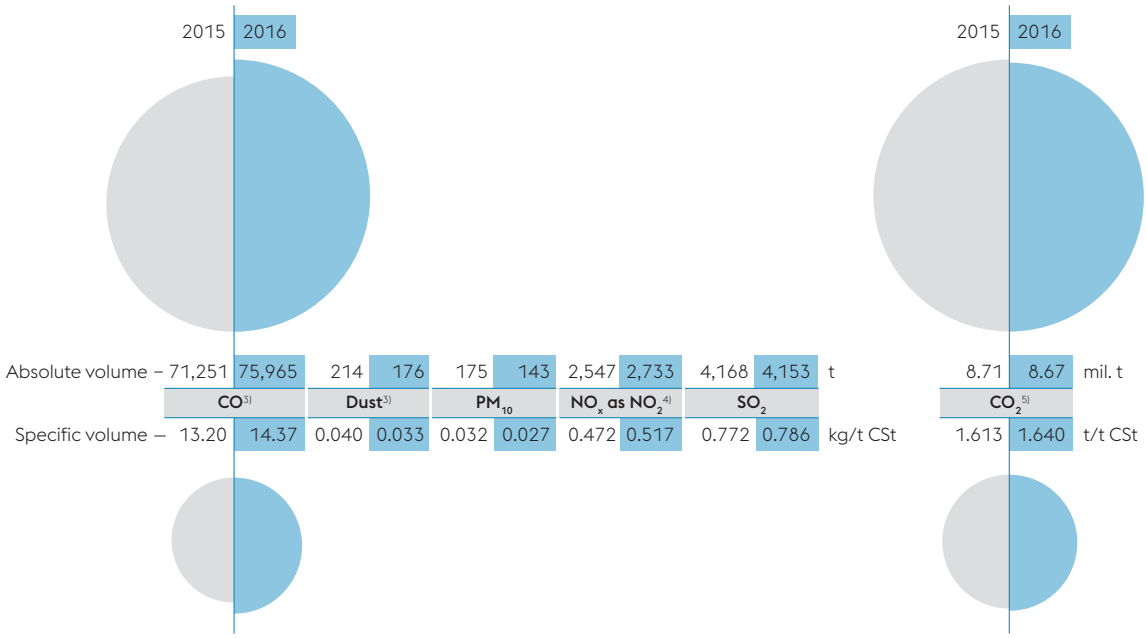



[1)] Increased proportion of renewable energies with respect to electricity labeling from purchased third-party electricity. This reflects the following for the 2016 calendar year: water power (40.72 %), solid biomass (3.67 %), liquid biomass (0.01 %), biogas (1.03 %), wind energy (8.26 %), photovoltaic power (1.5 %), waste containing a high percentage of biogenic materials (1.45 %), landfill gas (0.02 %), sewage gas (0.01 %) and geothermal energy (< 0.01 %).

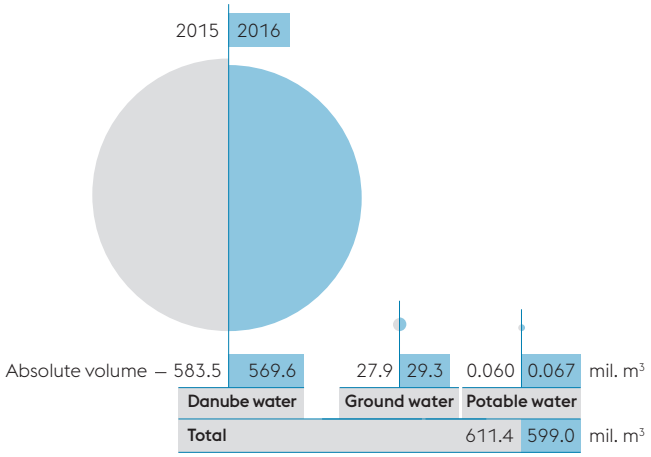
[2)] Values updated

The core indicators refer to total annual crude steel production. In the 2016 calendar year, the value was 5.29 million tons. In 2015 it was 5.40 million tons.

## Emissions




## Water systems




## Biological diversity [6]

Total site surface area: 5,040,019 m²

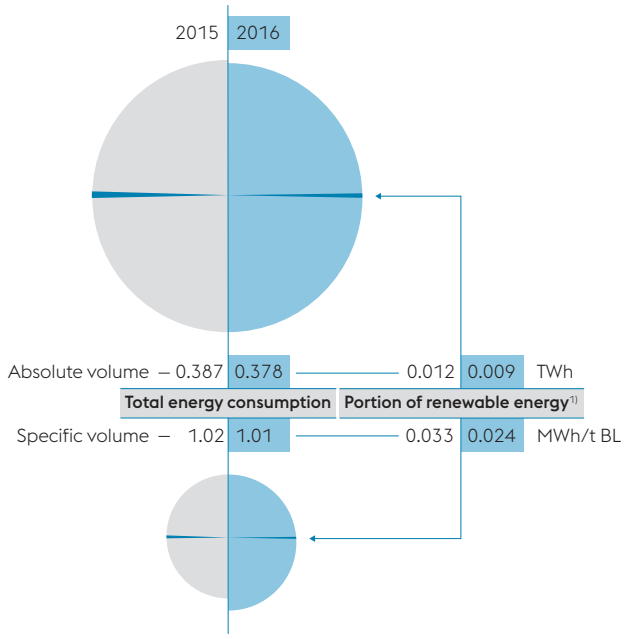
Other greenhouse gases such as methane and fluorochlorohydrocarbons (FCHC) are emitted in only small amounts (roughly 75 tons of methane and 72 kg of FCHC).

[3] From various reliable technical sources
[4] Process-related measure of variation
[5] From Emission Certificate Act (ECA) monitoring
[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 December 2015.

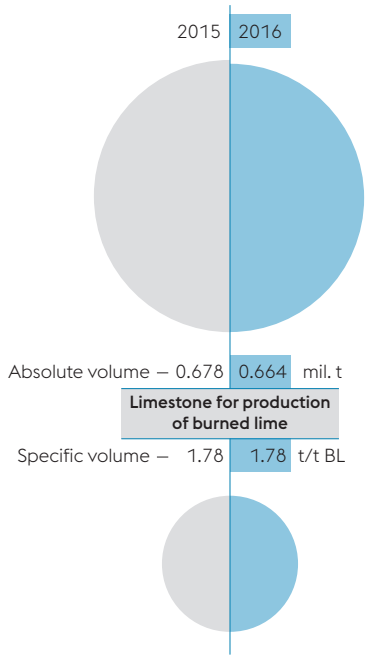
# CORE INDICATORS

## Steyrling location

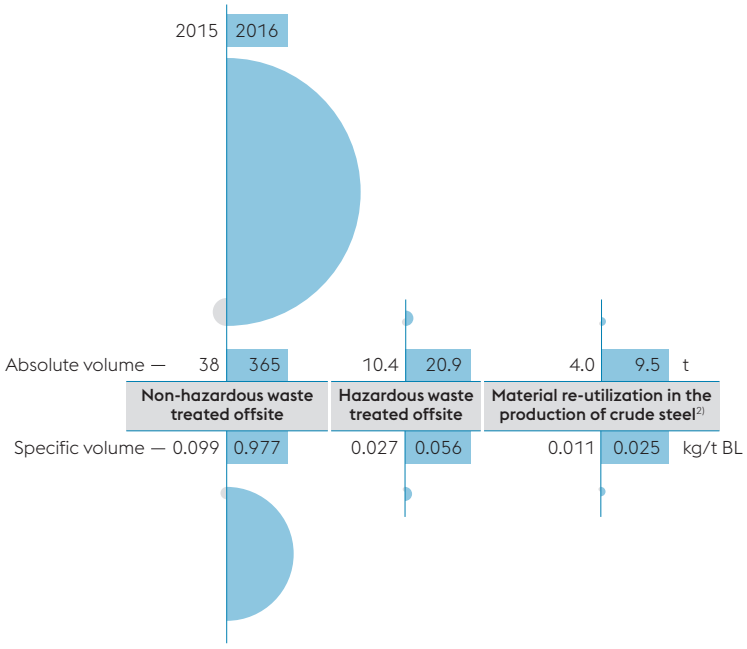
### Energy efficiency




### Material efficiency




### Waste management

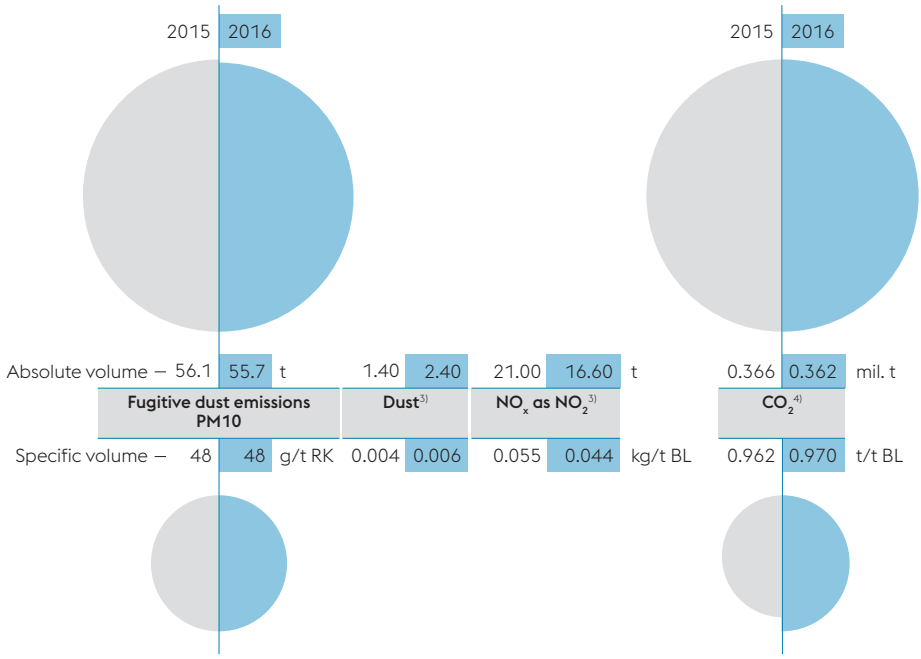



[1] Increased proportion of renewable energies with respect to electricity labeling from purchased third-party electricity. This reflects the following for the 2016 calendar year: water power (40.72 %), solid biomass (3.67 %), liquid biomass (0.01 %), biogas (1.03 %), wind energy (8.26 %), photovoltaic power (1.5 %), waste containing a high percentage of biogenic materials (1.45 %), landfill gas (0.02 %), sewage gas (0.01 %) and geothermal energy (< 0.01 %).

[2] Materials recycling at the Linz site

The core indicators refer to total annual burned lime production. In the 2016 calendar year, the value was 0.381 million tons. In 2015 it was 0.373 million tons.

## Emissions




## Biological diversity [5]

Total site surface area: 1,503,837 m²

[3] Emissions from lime furnaces
[4] From Emission Certificate Act (ECA) monitoring
[5] The core biological diversity indicator refers to the surface of the works premises at the Steyrling location as registered in the land registry in December 2015.

# ENVIRONMENTAL HIGHLIGHTS

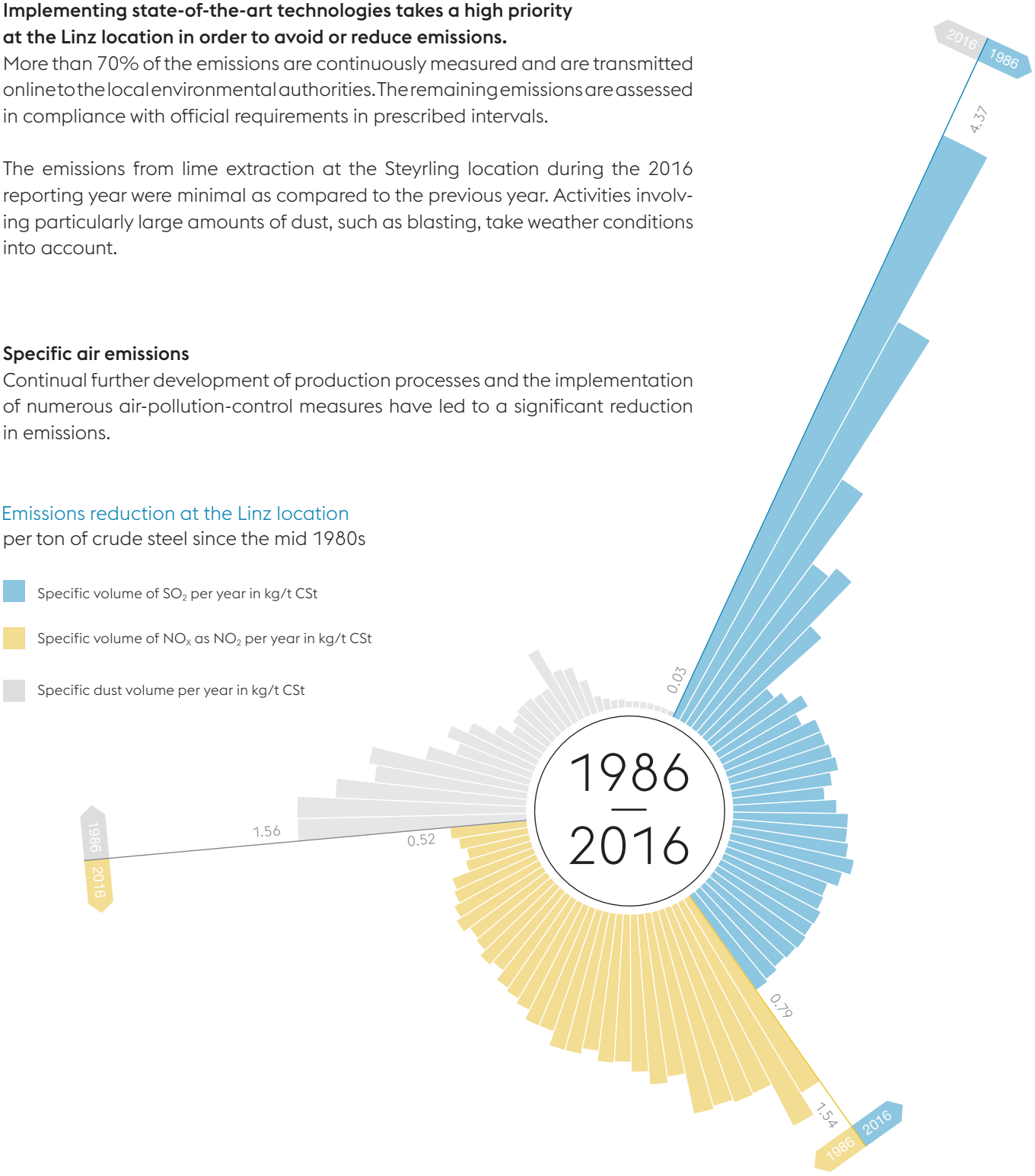
## Clean air

**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 2016 reporting year were minimal as compared to the previous year. Activities involving particularly large amounts of dust, such as blasting, take weather conditions into account.

**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.

Emissions reduction at the Linz location
per ton of crude steel since the mid 1980s




## $NO_x$ as $NO_2$

| Plant | | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Power station | Block 06 | 100 | 75 | 84 |
| | Block 03 | 100 | 66 | 59 |
| | Block 04 | 100 | 46 | 42 |
| | Block 05 | 100 | 60 | 56 |
| | Block 07 | 100 | 40 | 46 |
| | Gas and steam turbine | 33 | 25 | 24 |
| Blast furnace blower station | Central blower station 2, boiler 1 | 100 | 6 | 6 |
| | Central blower station 2, boiler 2 | 100 | 14 | 5 |
| Hot-rolling mill | Pusher-type furnace 06 | 430 | 170 | 273 [1] |
| | Pusher-type furnace 07 | 430 | 190 | 197 |
| | Walking-beam furnace 1 | [2] | 116 | 105 |
| Sintering plant | Sinter belt 5 | 150 [3] | 96 | 89 |
| Cold-rolling mill | Hot-dip galvanizing line III | 250 | 129 | 134 |
| | Hot-dip galvanizing line IV | 250 | 113 | 108 |
| | Hot-dip galvanizing line V | 250 | 77 | 106 |
| Heavy plates | Pusher-type furnace 1 | 500 | 346 | 339 |
| | Pusher-type furnace 2 | [2] | 188 | 177 |

## $SO_2$

| Plant | | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Power station | Block 06 | 200 | 83 | 88 |
| | Block 03 | 200 | 113 | 97 |
| | Block 04 | 200 | 125 | 102 |
| | Block 05 | 200 | 115 | 88 |
| | Block 07 | 200 | 118 | 100 |
| | Gas and steam turbine | 67 | 35 | 30 |
| Blast furnace | Casting bay dedusting (BF A) | 350 | 119 | 108 |
| LD steelmaking plant | Secondary dedusting 1 | 101.5 [4] | 26 | 28 |
| Hot-rolling mill | Pusher-type furnace 06 | 200 | 52 | 112 [1] |
| | Pusher-type furnace 07 | 200 | 56 | 49 |
| Coking plant | Sulfuric acid and gas cleaning system | 1000 [5] | 380 | 371 |
| Sintering plant | Sinter belt 5 | 350 | 298 | 298 |
| Heavy plates | Pusher-type furnace 1 | 200 | 115 | 104 |

All emission sources are continuously monitored. The data are referenced each individual calendar year.
[1] Pusher-type furnace No. 6 was converted in 2016 to coke-oven-gas operation, resulting in higher $SO_2$ and $NO_x$ concentrations.
[2] The limit value is defined in the course of the acceptance test.
[3] Sinter belt No. 5: additional limitation of daily mean values for $NO_x$ of 100 $mg/Nm^3$.
[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

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Power station | Block 03 | 100 | 0.5 | 1.7 |
| | Block 04 | 80 | 0.8 | 2.1 |
| | Block 05 | 80 | 0.7 | 2.3 |
| | Block 07 | 80 | 0.6 | 0.4 |
| | Gas and steam turbine | 33 | 1.0 | 1.4 |
| Blast furnace | Central blower station 2, boiler 1 | 80 | 0.2 | 0.1 |
| | Central blower station 2, boiler 2 | 80 | 0.1 | 3.0 |
| Coil coating line | Strip coating line 1 | 100 | 2.7 | 3.9 |
| | Coil Coating Line 2 | 100 | 7.8 | 7.4 |

## Total C

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Coil coating line | Strip coating line 1 | 30 | 2.7 | 2.5 |
| | Coil Coating Line 2 | 30 | 4.4 | 4.9 |

## $H_2S$

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Coking plant | | 500 [1] | 257 | 230 |

## HF

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Sintering plant | Sinter belt 5 | 3 | 0.8 | 1.1 |

## Hg

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Sintering plant | Sinter belt 5 | 0.05 | 0.043 | 0.040 |

## Dust

| | Plant | Half-hour-average value ($mg/m_n^3$) | Measured annual average value ($mg/m_n^3$) | |
|---|---|---|---|---|
| | | Limit value | 2015 CY | 2016 CY |
| Blast furnace | Casting bay dedusting (BF A) | 20 | 6.9 | 4.6 |
| | Casting bay dedusting system (BF 5 and 6) | 10 | 1.2 | 1.8 |
| Sintering plant | Sinter belt 5 | 10 | 1.6 | 1.6 |
| | Sinter plant dedusting | 24 | 12.5 | 5.4 [2] |
| | Sinter crusher and screening unit | 10 | 1.0 | 1.1 |
| LD steelmaking plant | Secondary dedusting 1 | 20 | 1.8 | 0.5 |
| | Secondary dedusting 2.1 | 10 | 2.1 | 2.3 |
| | Secondary dedusting 2.2 | 10 | 0.4 | 0.4 |

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 are referenced each individual 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 $SO_2$.

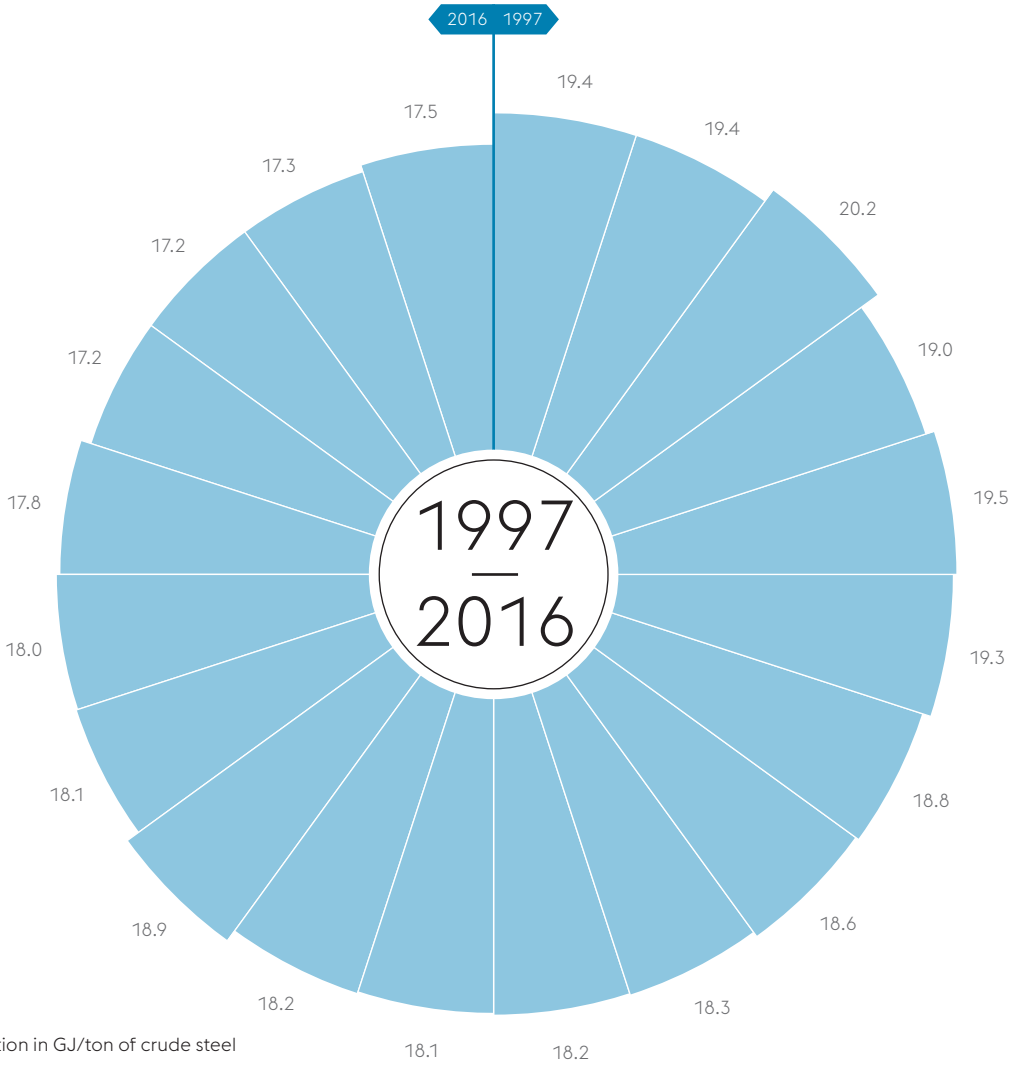
[2] Dedusting of sintering plant: Electric filter replaced by fabric filter in spring of 2016.


5,8m

## Energy

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

### Net energy consumption




Specific net energy consumption in GJ/ton of crude steel

The specific energy consumption was substantially reduced over the past twenty years. The Linz site is nearly energy-independent (with respect to electricity).

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 large, industrial-scale programs such as the optimization of steam generation, reduced loss of compressed air and the optimization of thermal processes. These and many other measures saved more than 50,000 MWh during the 2016 calendar year.

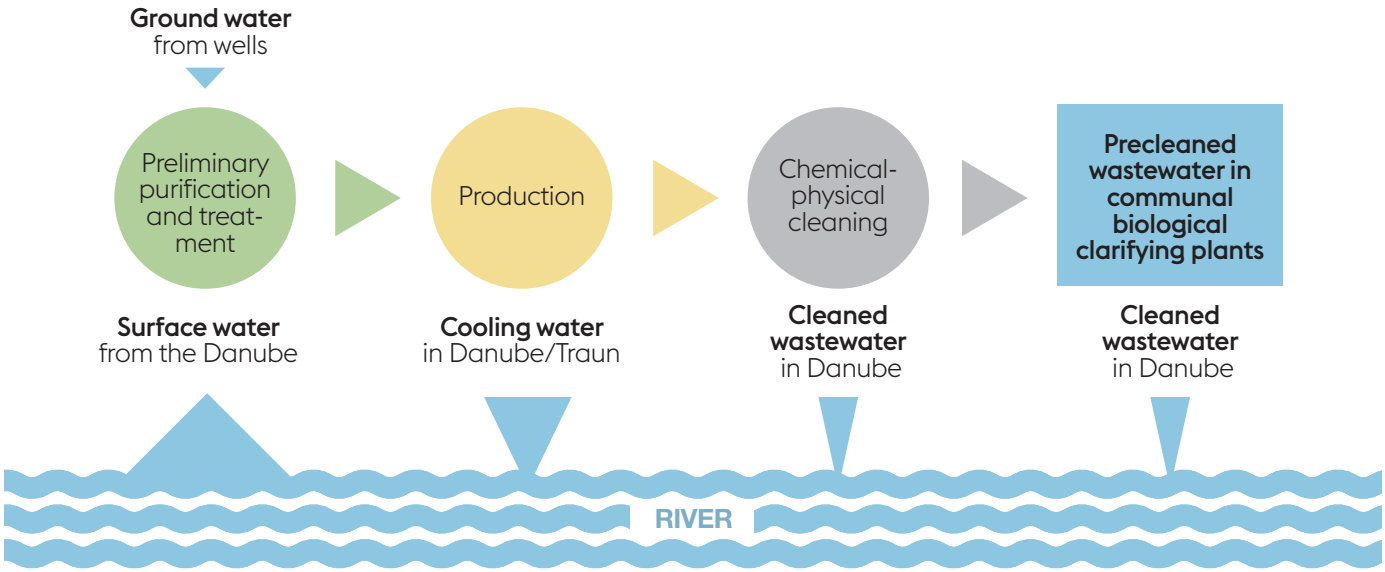
## Water management

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 570 million $m^3$ of water were pumped from the Danube in the 2016 calendar year. 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 communal clarifying plant in Asten for biological treatment.

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

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



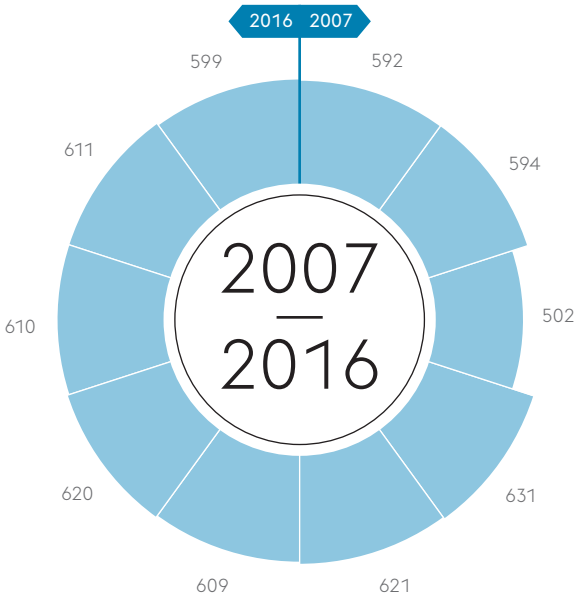
**Net blue water consumption**

A holistic method (ISO 14046) that goes beyond the mere monitoring of specific water consumption [$m^3$/t] is being implemented beginning in this calendar year to monitor and calculate net blue water consumption. Blue water consumption (direct) at the Linz location of voestalpine Stahl GmbH amounts to approximately 1.69 $m^3$/ton, whereas blue water consumption (total, including upstream) amounts to roughly 4.03 $m^3$/ton. [1)]

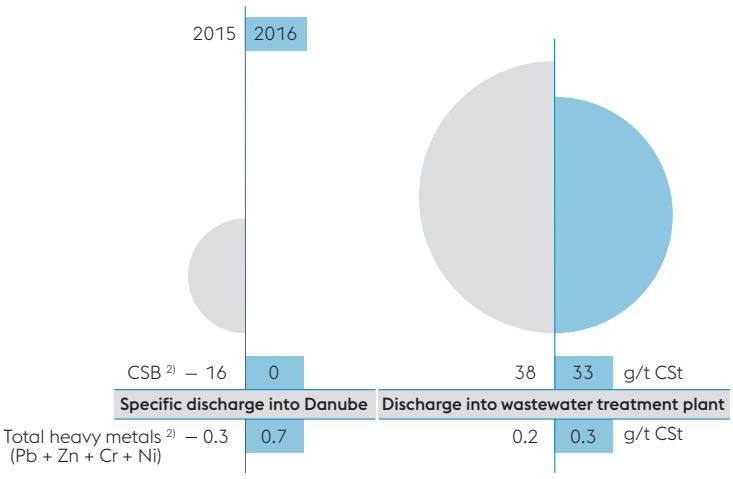
**Trends in discharged waste water volumes**

In the 2016 calendar year, the amount of utilized water amounted to 599 million cubic meters.

Discharged wastewater volumes




Wastewater load

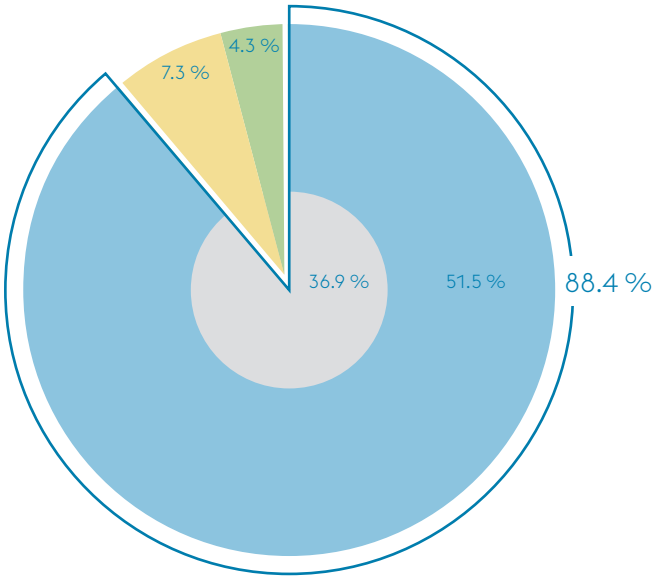



[1)] Based on data from 2013
[2)] Minus initial load from Danube


voestalpine
EINEN SCHRITT VORAUS.
LD STAHLWERK 3

## Waste management

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 site (not including scrap).

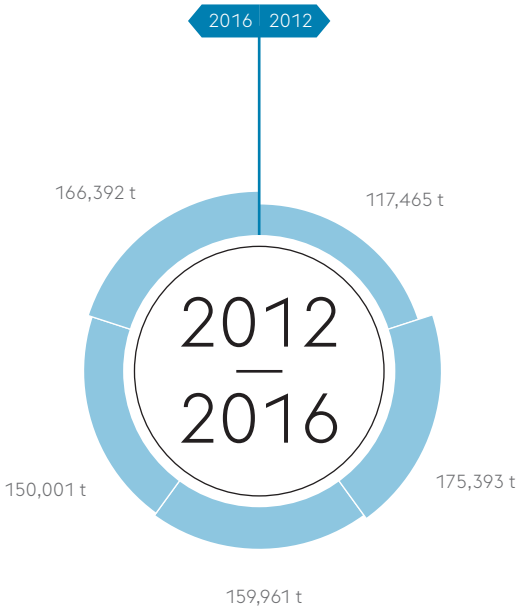



In the 2016 calendar year, approx. 37% of the recycled materials and waste incurred at the Linz location were re-utilized, thus increasing resource efficiency in production processes. (This value is increased to 55% when the in-house scrap recycling is taken into account.)

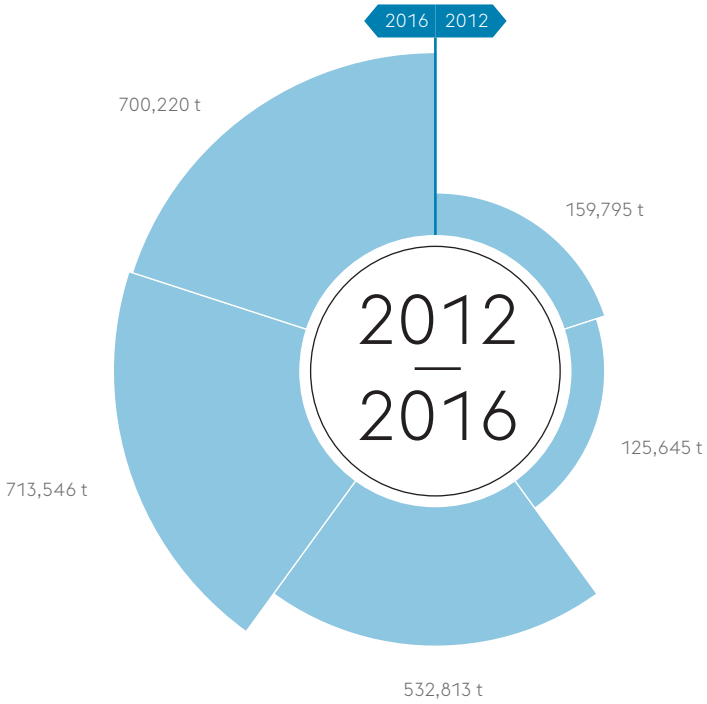
Materials recycling and the portion of re-used waste materials in total amount to a resource reutilization of approx. 88%.

- Recirculation and material reutilization in the production of crude steel
- Dumping (on site)
- Offsite recovery
- Offsite disposal
- Resource reutilization

### Hazardous externally treated waste




### Non-hazardous externally treated waste

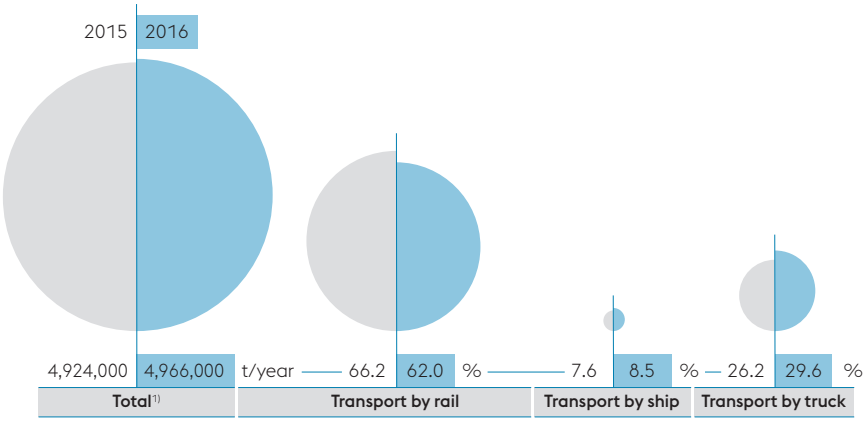


## Transport

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.

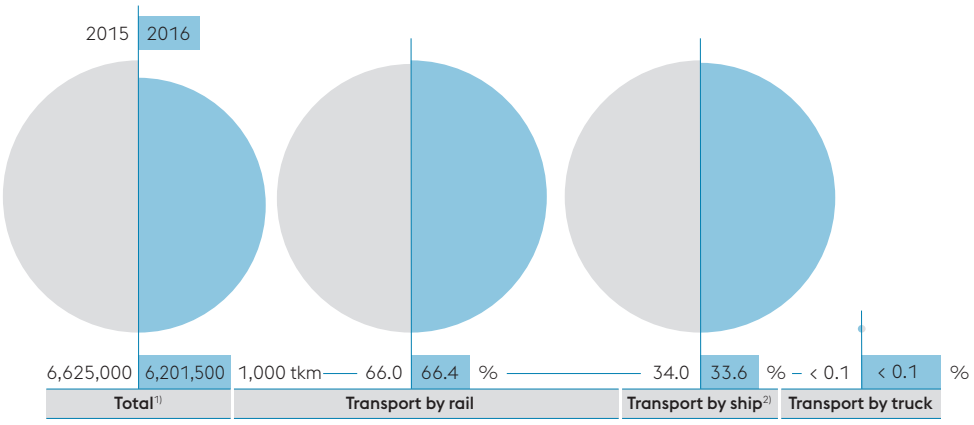
The figures for distribution of raw materials transported within Europe and distribution of product deliveries to the individual means of transport are as follows in the 2015 calendar year:

### Product dispatch




[1] Products delivered from the Linz site by Logistik Service GmbH and Cargo Service GmbH

### Raw material transports




[1] Raw material deliveries in ton kilometers of ore, coal, scrap, lime, coke and coke breeze
[2] Raw material transport by inland waterway

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.

# 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 advises you of 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 separation 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 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. The corresponding safety reports have been submitted to the authorities (Municipal Offices of the Provincial Capital City of Linz, Office of the Upper Austrian Provincial Government). These reports are regularly updated and are available for review.

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, e.g. 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 1260°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 2000 m3 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 SEPARATION UNIT

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 FACILITY

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

Heavy fuel oil is delivered in tankers via the river port to voestalpine Stahl GmbH and is there pumped directly through a closed-pipe system into the storage tanks. From the storage tanks, the heavy oil is pumped as it is required through piping to the blast furnaces, where it is utilized as an ore reduction agent in minimizing required volumes of coke. 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 1650 °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 (CaC2): | 63.1%–72.3% |
| Coal, including volatile constituents: | 5.5% |
| C content: | 32.59%–19.14% |
| Additional fluxes: | 3.0% |

Calcium carbide is not a flammable substance. Ethyne 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 (approx. 68% CaC2) in reaction with water yields roughly 258 $Nm^3$ ethyne (= 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.

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

## 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 area by gas search troop, evacuation of the cordoned off area, radio announcements, etc.

**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.

**Attention**

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**

Works fire department: T. +43/50304/15-5077
Environmental Department: T. +43/50304/15-5783
Occupational Safety Department: T. +43/50304/15-6190
Linde Gas GmbH: T. +43/50/4273-1616

**Link to Environmental Report on the internet**

www.voestalpine.com/group/en/group/environment/environmental-statements.html

# RADIATION, NOISE AND ODOR

PROTECTING OUR NEIGHBORS FROM NOISE AND OBNOXIOUS ODORS IS AN IMPORTANT PRIORITY FOR US.

## RADIATION

All raw materials at the site are inspected thoroughly for radiation by highly sensitive devices before they 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 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. We have taken seriously the rare complaints that have come from neighbors and have taken measures accordingly.

## ODOR

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

## VIBRATIONS

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

# GLOSSAR

**EMAS REGULATION**
Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 establishing a program for the volunteer participation of organizations in a community system dedicated to environmental management and company environmental impact assessment: EMAS = Eco Management and Audit Scheme.

**LD PROCESS**
Linz-Donawitz process – Top-blowing of hot metal with technical-grade oxygen.

**IMS POLICIES**
Guidelines and overall objectives set forth by executive management for the areas of quality, safety and environmental issues at the production site.

**ENVIRONMENTAL AUDIT**
Systematic, documented, regular and objective evaluation of environmental performance.

**ENVIRONMENTAL MANAGEMENT SYSTEM**
Part of a company-wide management system that includes organizational structures, planning activities, responsibilities, methods, processes, procedures and resources for the development, implementation, fulfillment, evaluation and maintenance of environmental policies.

**ENVIRONMENTAL PROGRAM**
Description of the measures required to achieve environmental objectives and individual environmental goals or planned measures (responsibilities, means and deadlines).

**SOIL VAPOR EXTRACTION (SVE)**
Soil vapor extraction in the course of a coking plant remediation project in Linz.

**BTEX**
Abbreviation for benzene, toluene, ethyl-benzene and xylene-volatile aromatic compounds.

**$DENO_X$**
Offgas denitrification system for the prevention of nitrous oxides as offgas, such as in power plants.

# INFORMATION, CONTACT AND ABOUT US

## Environmental statement

**The next consolidated Environmental Report will be submitted for review in October 2019 and published thereafter. In addition, an updated version is created, externally reviewed and published on an annual basis.**

## Certified environmental experts

Harald Ketzer
Florian Mitterauer
Lloyd's Register EMEA/Vienna branch
Opernring 1/E/620, 1010 Vienna, Austria

Lloyd's Register LRQA

**ENVIRONMENTAL VERIFIER'S DECLARATION ON VERIFICATION AND VALIDATION ACTIVITIES**

Lloyd's Register EMEA Niederlassung Wien, 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 (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**
**Linz, Steyrling**
**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.

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/D

| | |
|---|---|
| Date of verification: | 19 October 2017 |
| Verification Expiry: | 18 October 2020 |
| Date of validation: | 19 October 2017 |
| Validation Expiry: | 18 October 2020 |

DI Harald Ketzer, Lead Verifier
Lloyd's Register EMEA, Niederlassung Wien
1010 Vienna, Opernring 1/R/741-744, Austria
on behalf of Lloyd's Register Quality Assurance Ltd

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.

## Contact

Johann Prammer
Head of Strategic Environmental Management of voestalpine AG and Steel Division Environment Department

voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-77171

http://www.voestalpine.com/group/en/group/environment/

EMAS
Geprüftes Umweltmanagement
REG.NO. AT- 000216

The Linz and Steyrling 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.

**Registry number: AT-000216**

## About us

**Owner, editor and media owner**
voestalpine Stahl GmbH, voestalpine-Straße 3, 4020 Linz, Austria

**Responsible for content**
Johann Prammer

**Design**
WAK Werbeagentur GmbH, Linzer Straße 35
4614 Marchtrenk, Austria
www.wak.at

**voestalpine Grobblech GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0
grobblech@voestalpine.com
www.voestalpine.com/grobblech

**voestalpine Giesserei Linz GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0
giesserei@voestalpine.com
www.voestalpine.com/giesserei_linz

**voestalpine Steel & Service Center GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0
ssc@voestalpine.com
www.voestalpine.com/ssc

**voestalpine Standortservice GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0

**Logistik Service GmbH**
Lunzerstraße 41
4031 Linz, Austria
T. +43/732/6598-0
office@logserv.at
www.logserv.at

**voestalpine Camtec GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0
sales.camtec@voestalpine.com
www.voestalpine.com/camtec

**Cargo Service GmbH**
Lunzerstraße 41
4031 Linz, Austria
T. +43/732/6598-0
office@cargoserv.at
www.cargoserv.at

**voestalpine Automotive Components Linz GmbH**
Stahlstraße 47
4020 Linz, Austria
T. +43/50304/15-0
automotivecomponents.linz@voestalpine.com
www.voestalpine.com/automotivecomponents

**voestalpine Stahl GmbH**
voestalpine-Straße 3
4020 Linz, Austria
T. +43/50304/15-0
stahl@voestalpine.com
www.voestalpine.com/steel

voestalpine
ONE STEP AHEAD.