

Updated Aurubis AG
Environmental Statement 2015
Hamburg and Lünen Sites

Company portrait

our business, our Business Units

Company portrait

Aurubis AG is a leading international integrated copper group with a strong foundation in Europe. Our portfolio includes copper production, metal recycling and copper product fabrication. We are therefore represented in central areas of the industrial metal's value-added chain. The production of precious metals and specialty products completes the range of services. Aurubis produces at sites in Europe and the USA and has a broad service and sales system that supports product sales in Europe, Asia and North America. About 6,300 employees work for Aurubis worldwide. We are oriented to growth and to increasing value: the main focuses of our strategy are on strengthening the business, utilizing growth opportunities and responsibility towards people, resources and the environment. Aurubis shares are part of the Prime Standard Segment of the Deutsche Börse and are listed in the MDAX and the Global Challenges Index.

Our business model

Our business model combines the production, recycling and processing of metals under one roof. This provides us with a great deal of flexibility in controlling raw material procurement and production. Our product and service spectrum is strongly oriented towards the needs of the market. Standard and specialty product solutions are offered in addition to comprehensive services.

We produce copper first and foremost from copper concentrates but also from intermediate products from other metal producers, copper scrap and other recycling materials, including metal production residues and electronic

scrap. A broad range of tramp elements is extracted and processed into products such as precious metals, by-products like lead, tin and selenium as well as sulfuric acid and iron silicate.

The copper cathodes produced at our sites in Hamburg, Lünen, Olen and Pirdop are of an excellent quality that exceeds the requirements of the metal exchanges. We primarily process the cathodes into copper products, but they can also be sold on the London Metal Exchange and to trade and industry.

History

Aurubis was founded in 1866 as "Norddeutsche Affinerie Aktiengesellschaft" in Hamburg. Following various changes in the ownership structure, the company went on the stock exchange in 1998. Several subsidiaries and affiliated companies belong to the Group, as does the Belgian copper rod and semi-finished product fabricator Cumerio acquired in 2008. The company was renamed Aurubis in 2009. The product business became stronger and more international with the acquisition of the Luvata Rolled Products Division on September 1, 2011. With this acquisition, Aurubis has additional production sites in Buffalo (USA), Pori (Finland) and Zutphen (Netherlands) as well as service centers in Zutphen, Mortara (Italy) and Shanghai (China) and sales offices in the USA, Europe and several Asian countries.

This Environmental Statement applies to Aurubis AG, which comprises the Hamburg and Lünen sites.

Company guidelines and corporate environmental protection guidelines

The former Luvata sites, which were integrated into the Group in 2011, were successfully integrated into Group environmental protection. After the good experience with the integration of the former Cumerio sites in 2008, it was important to analyze how the environmental protection situation could be further developed at the new sites as well. The following principles are laid out in our company guidelines:

- » The continuous improvement of water pollution control, soil conservation and immission control are key aims of environmental protection.
- » For reasons of accountability, environmental and climate protection should be developed in such a way as to preserve natural resources and avoid or minimize strain on the environment and our employees.
- » Issues of environmental protection should be taken into account equally in the planning and development of new products and production processes.
- » Processed raw materials and intermediate products should be brought into the economic cycle as completely as possible and unavoidable waste should be properly recycled or harmlessly disposed of. Raw material suppliers are advised on issues related to environmental protection if needed.
- » Essential precautions to avoid accidents and operational disruptions are in place to prevent or minimize environmental hazards for our employees and neighbors as well as effects on the environment.
- » Our employees' sense of responsibility in environmental protection should be strengthened and an objective, open and respectful dialogue should take place with them, the relevant authorities and the public.
- » Our customers are appropriately informed about the features of our products and necessary safety measures and are advised on questions related to product disposal.
- » External companies working for us must be selected, informed and advised in such a way as to ensure that laws and our environmental protection standards are observed.

Compliance with legal regulations is the basis and minimum standard of our activities.

Aurubis assumes responsibility for environmental and climate protection, which is a key issue in the company's strategy. Metals are necessary for technical progress and a high standard of living. Rising demand worldwide is met with limited resources, however. Metal recycling is therefore an important source of raw materials – especially for a country like Germany that lacks natural resources. It makes an important contribution to supply security, sustainability and resource protection.

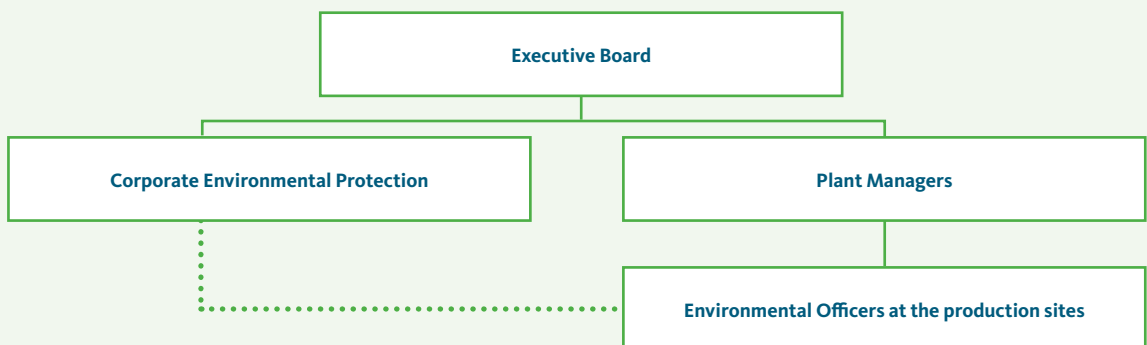
Aurubis obtains raw materials from more than 50 countries worldwide, with a focus on Europe for secondary raw materials. Environmentally friendly multi-metal production from primary raw materials and multi-metal recycling form the basis for a demand-oriented copper supply. A number of recycling raw materials, for example circuit boards, copper pipes and electronic scrap, are purchased and processed as part of Aurubis' multi-metal recycling. High volumes of recycling raw materials are processed into cathode copper and precious metals at the Hamburg site as well. Since copper concentrate processing is an exo-

thermic process, recycling materials can be melted when processing primary raw materials in Hamburg, practically without any additional energy.

We assume responsibility for environmentally friendly production with the highest energy efficiency standard for climate protection and have established these targets in our company guidelines. Alignment with the market, orientation towards growth, a clear commitment to efficiency and continuous improvement processes, high quality awareness in all sectors and ecological and social responsibility: all of these factors secure the future of the Group.

Expanding recycling in the Group helps to close material cycles in an environmentally sound manner and therefore makes an important contribution to sustainable development. Beyond legal requirements, voluntary agreements like the chemical industry's "Responsible Care" initiative are important instruments for Aurubis to continuously improve its environmental and health protection performance.

Fig. 1.0: **Corporate Environmental Protection organizational chart**



The Corporate Environmental Protection Department is responsible for the strategic orientation of environmental protection and directly reports to the Executive Board. Environmental Officers oversee the environmental protection duties at the individual sites under the technical supervision of the Corporate Environmental Protection management (see Fig. 1.0).

With the involvement of employees, Plant Managers/ Managing Directors and the Executive Board, uniform environmental protection standards were developed, established with corporate guidelines and implemented across the Group as part of the environmental management system (ISO 14001 or EMAS).

The key environmental protection factors, which are uniform within the Group, are reviewed and certified annually. Environmental discussions take place across the Group and employees are trained on environmentally relevant topics regularly. Emergency plans or alarm and danger prevention plans have been established at all sites for emergencies and accidents. They ensure that environmental impacts are effectively avoided and that employees and the community are protected. We carry out training sessions and emergency drills regularly, documenting and evaluating the procedures. Emergency plans are developed in coordination with the responsible authorities. The corporate environmental protection guidelines also include the tasks to implement the European chemical regulation, REACH.

Updated Aurubis AG Environmental Statement 2015

Hamburg Site

The largest Aurubis AG production site and the Group headquarters is located on the Elbe island Peute, only about four kilometers as the crow flies from Hamburg's city hall.

The plant was constructed in 1908 on an area of about 870,000 m² in Peute, an industrial inland harbor area in the Veddel district. Following reconstruction after World War II, the production facilities were continuously expanded and steadily modernized. Today, Aurubis AG's Hamburg site is one of the world's most state-of-the-art primary and secondary copper smelters and has an authorized production capacity of 450,000 t of copper cathodes each year. About 2,280 personnel are employed at the Hamburg site, including around 151 apprentices.

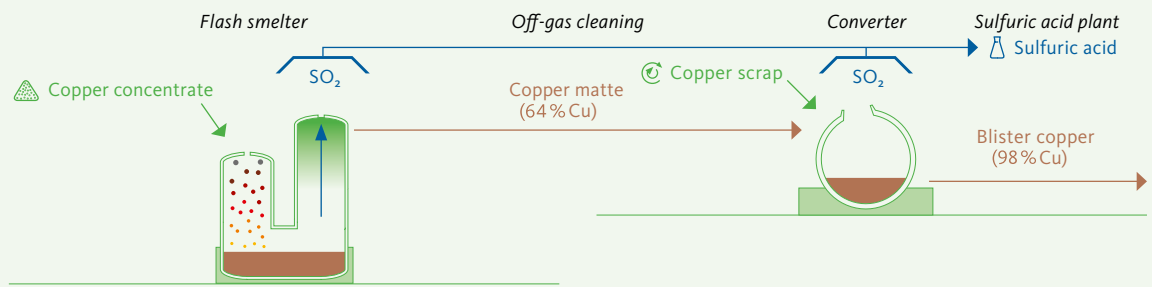
The individual production sectors at Aurubis AG in Hamburg are divided into three plant areas (see Fig. 1.1): the North Plant (RWN) is mainly comprised of the administrative building, the workshops, the secondary copper smelter and precious metal production. The South Plant (WS) includes the sludge decomposition plant, the cracking acid cleaning facility, the wastewater treatment facility, the concentrate delivery area, the chemical plants and the casting lines in particular. The primary smelter sector includes the main primary copper production facilities: the RWO, the sulfuric acid production plants and the tankhouse. This section also houses the rod plant.

Fig. 1.1: The main Aurubis plant in Hamburg – a downtown copper smelter



1 Casting lines 2 Secondary smelter/precious metals 3 Rod line 4 Tankhouse 5 RWO

Fig. 1.2: From copper concentrate to cathode

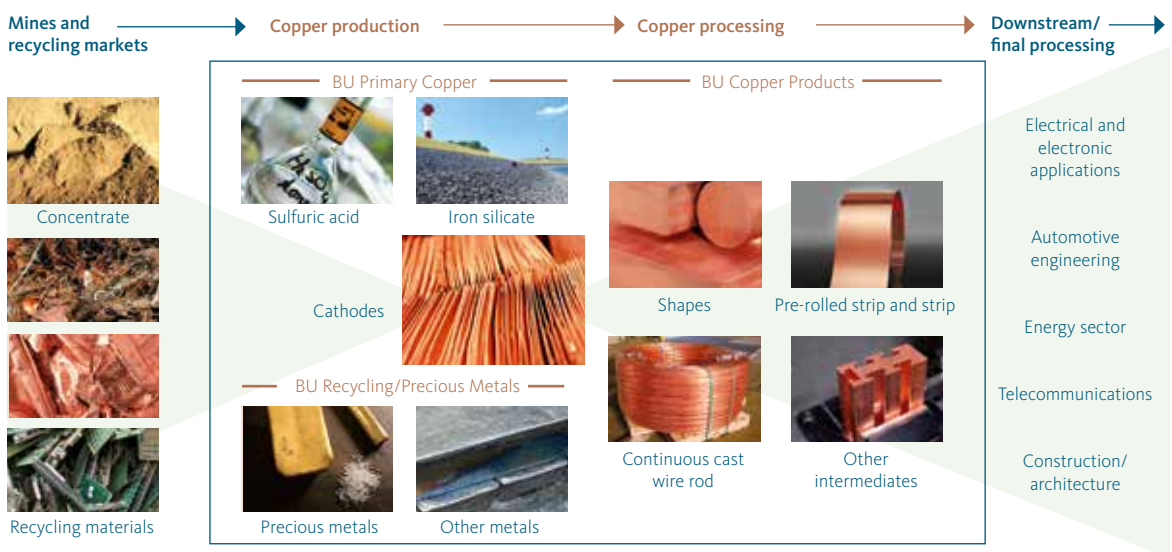


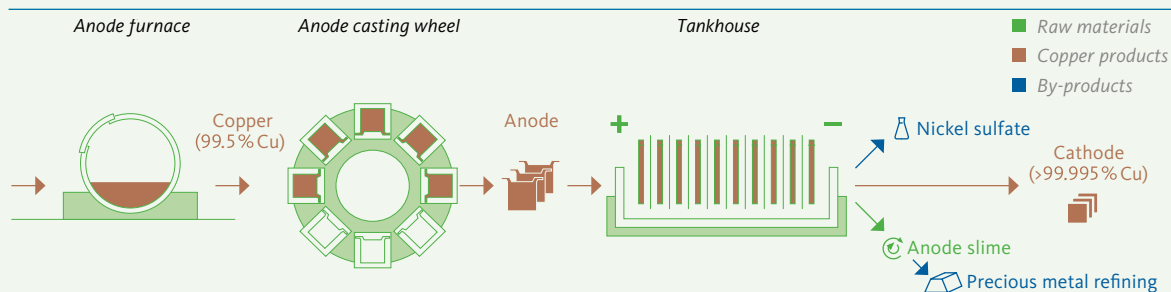
Aurubis is an integrated copper producer that operates copper production and processing facilities at the Hamburg site (see Fig. 1.3).

Copper anodes with about 99% purity are produced from copper concentrates and recycling materials in a pyrometallurgical process in the primary smelter. The iron contained in the copper concentrate is recovered from the process and marketed as iron silicate stone or granules. The sulfur found in the raw materials initially occurs as gaseous sulfur dioxide (SO₂) in the process off-gas and is converted in the so-called contact plant into high-purity sulfuric acid, which is primarily sold to the fertilizer and chemical industry.

The main raw materials for copper production are copper concentrates (processed copper ores) and recycling materials (including electrical and electronic scrap). Pure copper is produced from the various raw materials after the smelting process in the tankhouse. The copper can be traded on the international metal exchanges. However, Aurubis only sells a small proportion of the copper cathodes on the exchange. Most of the cathodes are processed into copper products such as continuous cast wire rod, shapes, strip, sheet, foil, wire and profiles at the different Group sites.

Fig. 1.3: Aurubis, an integrated copper producer





As part of multi-metal recycling, precious metals, nickel, lead and zinc as well as iron silicate products and sulfuric acid are produced from input materials which are very complex in some cases. Non-ferrous metals such as copper are not used up but can be recycled as often as desired without a loss of quality, therefore fulfilling an important role in environmental and resource protection. Nearly all raw materials are transferred to marketable products at Aurubis Hamburg (see Fig. 1.2).

The environmental management system

Aurubis has had an environmental management system at the Hamburg site since 2002, which is certified in accordance with ISO 14001 and EMAS. The annual TÜV review is a good opportunity for Aurubis to have its effective implementation of environmental protection and the resulting successes inspected and verified by an external third party.

The energy management system at the Hamburg site was implemented in 2005. It has been reviewed within the scope of environmental protection up to now. Because of the increasing significance of the certified energy management system and the current energy policy conditions, it was certified in accordance with DIN EN ISO 50001 in May 2013.

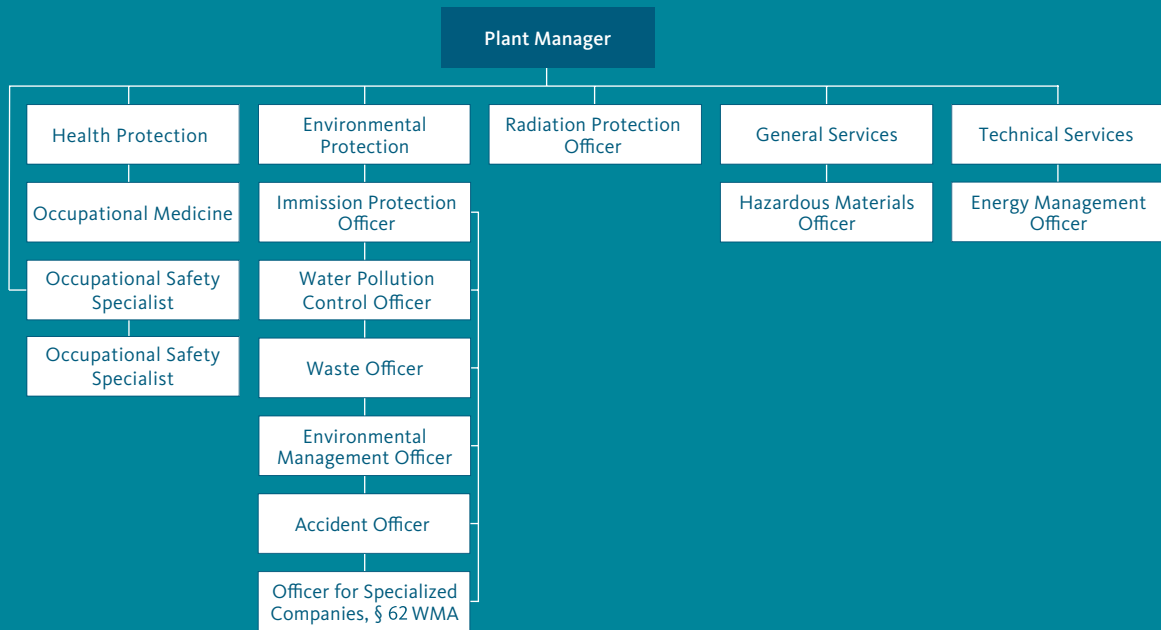
Targets and tasks of the environmental management system

The environmental management system helps us to confidently control production processes. In particular, targets and measures are defined and their implementation is monitored. The environmental management system includes the documentation of operational processes, external environmental reviews, internal audits, routine recordings and site inspections. Inventories form the basis for decisions about the type, extent, suitability and execution of environmental protection measures.

Our environmental protection management system ensures that the applicable legal requirements are fulfilled with respect to environmental protection. Furthermore, it supports the continuous improvement of our environmental protection efforts with economically reasonable product and process design that takes the environment and occupational safety into account. Saving energy is also part of environmental protection for us, so we also had our energy management system certified in accordance with DIN EN ISO 50001. The energy flows are presented transparently and optimization potential is documented. The systems and organization of environmental management and health protection are described extensively and understandably in a handbook available to employees. This management handbook guarantees that all activities that concern environmental aspects and occupational safety issues are planned, managed, monitored and continuously improved with due regard to legal requirements.

The environmental management system EMAS also helps in the implementation of the Aurubis Group sustainability targets, which were newly defined in 2013, at the Hamburg site.

Fig. 1.4: Environmental protection organization at the Hamburg site



Environmental management organization

As the operator of facilities requiring a permit in accordance with § 52a Federal Immission Protection Law and § 53 Recycling Management and Waste Law, the Aurubis AG Executive Board or an appointed member of the Executive Board is responsible for observing environmental protection and radiation protection regulations. A member of the Hamburg Environmental Protection Department assumes the position of Environmental Management Officer and reports to the Executive Board. As part of the environmental management system, the Hamburg Environmental Protection Department tracks changes in legal requirements, reviews their effects on the different areas of our company and ensures that our facilities are operated in conformity with the law. Furthermore, the Environmental Management Officer updates the legal directory.

The Hamburg Environmental Protection Department provides employees with training and information related to environmental protection.

The company management has appointed officers or specified individuals responsible for the following issues in order to fulfill corporate duties (see Fig. 1.4):

- » Immission protection
- » Water pollution control
- » Waste management
- » Radiation protection
- » Hazardous materials
- » Environmental management
- » Officer for Specialized Companies pursuant to the Water Management Act
- » Occupational Safety Specialists
- » Medical Department
- » Energy Management Officer

All environmental protection issues are coordinated, organized and monitored in the Hamburg Environmental Protection Department to support the different business sectors. The department also serves as a contact for company environmental protection.

Monitoring and internal auditing of environmental management

The environmental management system's effectiveness is reviewed with internal audits pursuant to EMAS regulations and ISO 14001. The approach for the internal audits is defined in specific process instructions. Internal and external audits take place annually in compliance with the EMAS and ISO 14001 requirements.

The external audit involves verifying the description of operating processes and reviewing the environmental data provided. The results of the company environmental audits and internal audits are compiled in a report and presented to the Executive Board for assessment (Management Review). The Executive Board evaluates how suitable, appropriate and effective the management system is and whether our principles for environmental protection, health protection and occupational safety are being successfully implemented.

The Executive Board also evaluates the energy management system as part of a Management Review.

Emergency measures and crisis management

Because of the type and quantity of materials handled, the Hamburg production site is subject to the obligations of the German Accident Regulation. The existing safety report in accordance with § 9 Accident Regulation was updated for the entire Aurubis AG plant in Hamburg in 2010.

The inspections in the safety report are based in particular on the relevant technical facility data and the composition of the materials handled. According to this safety report, serious danger within the meaning of the Accident Regulation can be ruled out for the facilities. Furthermore, the measures provided to protect the general public and the surrounding area from other dangers, substantial disadvantages and significant disturbances pursuant to § 4b of the 12th German Federal Immission Protection Law prevent or limit large-scale damages.

All of the additional safety sub-reports were updated up to 2012.

Fig. 1.5: Quantity of hazardous materials transported at the Hamburg and Lünen sites

| Mode of transport in t p.a. | FY 08/09 | FY 09/10 | FY 10/11 | FY 11/12 | FY 12/13 | FY 13/14 |
|-----------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Road | 57,311 | 69,145 | 87,960 | 97,280 | 86,894 | 93,066 |
| Rail | 83,170 | 102,016 | 198,323 | 197,155 | 192,243 | 200,400 |
| Inland waterways | 1,081,870 | 839,815 | 780,897 | 816,896 | 719,811 | 716,244 |
| Sea | 10,465 | 5,924 | 5,781 | 7,573 | 7,876 | 5,270 |
| Air | 0.2 | 0.1 | 0.1 | <1 | <1 | <1 |
| Total | 1,232,816 | 1,016,900 | 1,072,961 | 1,118,904 | 1,006,825 | 1,014,981 |

Emergency plans are in place for emergency situations and accidents. They describe how to react to prevent or limit environmental effects. We routinely carry out emergency drills, documenting and evaluating the processes. Moreover, we have developed an alarm and danger prevention plan in coordination with the responsible authorities, which describes emergency measures for our plant premises. The individual plant divisions also have alarm and danger prevention plans. These documents are issued by the Plant Fire Department or the plant divisions in cooperation with the Environmental Protection Department and are accessible to all parties involved in the emergency.

Our Plant Fire Department works around the clock in Hamburg. Employees are on call for each plant division and for all of the relevant departments. An engineer on duty who can also be reached at any time coordinates the required measures. The engineers rotate weekly.

In an emergency, the individuals listed in the emergency plan are responsible for passing on information to the public.

In the fourth quarter of 2012, the informational brochure on incidents, "Safety for Our Neighbors", was revised and updated in collaboration with 30 other companies in Hamburg to provide information to the public. The brochure, which was coordinated by the Hamburg Chamber of Commerce, was sent to all of the households concerned in February 2013. The brochure is also available as a download on the Chamber of Commerce website.

Indirect environmental effects

Indirect environmental effects are effects that are not directly caused by our production processes on site. Therefore, Aurubis cannot directly influence them. These include the upstream and downstream value-added stages. We cannot directly influence transports of hazardous materials which we have commissioned, either.

Transporting hazardous materials

A separate internal Hazardous Materials Officer was appointed for both the Hamburg and Lünen sites and the relevant authorities have been informed.

In fiscal year (FY) 2013/14, a total of 1,014,981 t of hazardous materials was consigned for delivery at the Hamburg and Lünen sites, of which over 90% was various sulfuric acid products (UN 1830 and UN 1831) from dangerous goods class 8, "Corrosive Substances", from the Hamburg site (see Fig. 1.5).

No accidents with hazardous material leakage occurred during the reporting period. Isolated irregularities were corrected immediately before transport in compliance with the relevant regulations on hazardous materials. Internal consultations, monitoring and training were carried out repeatedly in order to maintain this high safety standard.

Fig. 1.6: Origin of copper concentrates for the Hamburg site

in percent, fiscal year 2013/14



Origin of the raw material copper concentrate

Our raw material for primary copper production, copper concentrate, is mainly extracted on-site at mines, where ores with about 0.5% to 4% copper content are concentrated to an average copper content of 25-30% to reduce transport volumes.

Our primary ore concentrate suppliers are the mining companies Vale, Teck, Glencore-Xstrata, Antofagasta, First Quantum and Newmont. These global mining companies have committed themselves to a sustainable corporate policy and to releasing environmental reports, which can be found on the companies' websites. Aurubis is currently developing a business partner screening process. In this context, options for integrating environmental protection and social aspects into the screening are being reviewed. A corresponding process is currently being implemented. In the future all suppliers and customers will be reviewed with respect to sustainability and therefore environmental aspects, among other features. A risk assessment will take place, leading to a more intensive review if necessary.

We obtain most of the copper concentrate from South America (78 %), 3% from Asia, 8% from Canada, 4% from Australia and small quantities from other countries. The concentrate is transported almost exclusively by sea in bulk carriers via Brunsbüttel. Special ships suitable for inland waterways are used to deliver the concentrate mixtures. They drop off their cargo in the Muggenburger Canal with a crane. In fiscal year 2013/14, 1.1 million t of copper concentrates were delivered to our plant in this way.

Indirect CO₂ emissions

Copper production is an energy-intensive process for which a reliable electricity supply is very important in particular. Aurubis therefore has a long-term cost-based electricity supply contract with the coal power plant Moorburg (a so-called virtual "power plant slice"). This is one of the most state-of-the-art and efficient power plants of its kind. Electricity production in this power plant nevertheless leads to CO₂ emissions, which are indirect CO₂ emissions for Aurubis, and therefore indirect environmental effects. In 2014, these indirect CO₂ emissions totaled 398,144 t. Overall, 324,521 t of the indirect CO₂ emissions resulted from electricity consumption in the production processes, while 73,624 t resulted from the additional electricity consumption for oxygen production.

In order to reduce indirect CO₂ emissions further as well, the utilization of waste heat was expanded in the form of an interplant turbine to generate electricity in primary copper production. It was commissioned in Q4 2014. This project alone reduces indirect CO₂ emissions by 5,000 t. Electricity from other regenerative energy sources currently isn't used in the production processes.

A total of 9,068 MWh of electricity was produced from waste heat in 2014, or 1.35% of total electricity consumption (2013: 1.17%). There was an increase in the electricity produced from waste heat due to the shutdown of the production facilities in September/October 2013.

Furthermore, landfill gas was used in the production processes instead of natural gas (2014: 3,583 MWh). Aurubis thus uses 100 % of the landfill gas collected in the former Georgswerder landfill.

Steam is required for copper production processes. This steam is produced in large part from waste heat; in 2014, 73 % of the necessary steam was produced from waste heat and only 27 % was produced from fossil fuels.

In Hamburg the completion of the Hamburg-Schwerin transmission line represented an important step in increasing supply security. This allowed us to reduce our protective measures considerably by the end of 2012. In the meantime, some temporary solutions for an emergency electricity supply have been replaced with permanent measures. The situation regarding the lack of local electricity production in Hamburg has eased. The first block of the coal power plant Moorburg started up on February 28, 2015. The second is supposed to follow in mid-2015.

Environmental protection data and facts

The production facilities operated in Hamburg are licensed pursuant to immission protection law. With respect to water pollution control, cleaned rainwater, wastewater and cooling water are fed in in compliance with existing water law permits. Data is collected at the Hamburg plant on the basis of data in the SAP system, the PI system, internal recordings and the results of comprehensive measuring programs. Calculation methods and data collection are documented so that data is always traceable and verifiable. Environmental aspects and data are reviewed, analyzed and evaluated as part of routine quality circles, management discussions and audits. Environmental protection focuses and environmental targets can be established this way. The key indicators required by EMAS III are also redefined annually and checked for plausibility in this process.

During the internal audits, the company's 2014 environmental targets were reviewed to see if they had been fulfilled. This was confirmed for all of the relevant environmental targets with a direct influence on environmental effects. Several additional targets were updated and new targets were defined and documented.

The focus of the new Environmental Program is on further improving emission reduction and climate protection. Environmental quality circles and continued employee training were arranged to strengthen environmental awareness and implement the environmental protection targets. Division targets were set in 2014, and their implementation is being reviewed and documented.

The public contract Aurubis signed in 2011 with the city of Hamburg addresses the issue of air pollution control. The contract envisions a 9 t reduction in dust emissions per year based on the Emissions Declaration of 2008. The measures agreed on in the contract were incorporated in the new Environmental Program.

The contract includes environmental protection measures with a capital expenditure volume of € 20 million; the agreement runs until 2016.

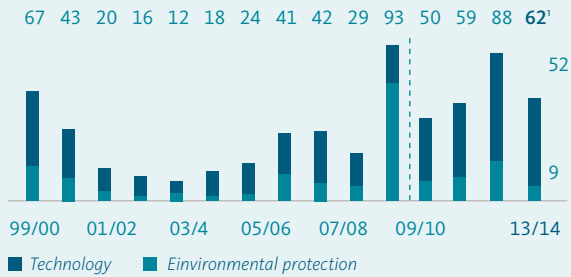
As documented in the measures, a new crusher was connected to the recently built North Plant warehouse in 2012. In addition, a sprinkler system was installed in the area between the crusher and the entrance to the bulk material warehouse, which will reduce fugitive emissions even further, especially in the case of dry weather.

The main measures are as follows:

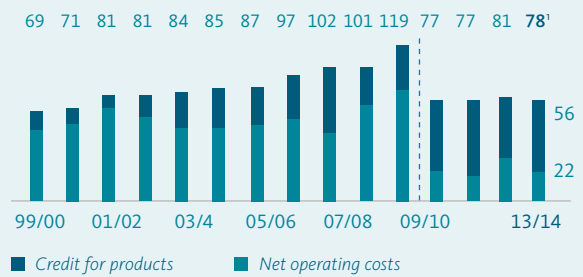
- » In secondary copper production, the new crusher will be connected to the recently constructed North Plant warehouse.
- » In primary copper production, a turbine was built to produce electricity from waste heat (CO₂ reduction of 5,000 t per year). It was commissioned in Q4 2014.
- » A feasibility study on sealing off the ridge turrets in the primary smelter has been drafted. The subject of the study is the avoidance of fugitive emissions via the ridge turrets in primary copper production. In the course of the investigations, potential for improving the flow and the source extraction within the hall were also identified and will be implemented in additional projects. The results have been available since late 2014. The measures that will have to be implemented are currently being coordinated with the Hamburg Authority for Urban Planning and the Environment. The goal is to implement the measures by late 2015.

Fig. 1.7: High capital expenditure for environmental protection measures leads to higher operating costs

Capital expenditure at the Hamburg site in € million



Operating costs for environmental protection in Hamburg in € million



¹ Because of a change in the accounting procedure, the information starting in 2010/11 deviates significantly from the previous years.

Investments in environmental protection

At Aurubis, copper and by-products are produced as sustainably as possible with the use of state-of-the-art plant technologies with very high environmental protection standards in order to conserve natural resources and maintain a clean environment for future generations. We therefore continuously invest in modern plant and environmental protection technology. Our most important tasks include constantly improving air quality, energy efficiency and water pollution control as well as conserving natural resources for future generations.

An average of about one-third of the Aurubis Group's total capital expenditure has gone to environmental protection measures over the years. Since 1981, total capital expenditure has amounted to over € 1.2 billion, of which € 416 million was capital expenditure for the environment. By implementing these measures and operating state-of-the-art, innovative plant technologies, Aurubis AG is a leader in climate and environmental protection in the primary and secondary copper production sectors and in the production of wire, continuous cast material and flat rolled products (preliminary stages of processing). Today, only comparatively smaller improvements can be achieved with continued high capital expenditure on environmental protection because a leading international environmental standard has been reached and emission reduction is subject to technological limitations (see Fig. 1.7).

At the same time, the operation of facilities that provide environmental protection (e.g. filter facilities) incurs substantial costs. This trend has increased in the last few years due to higher energy prices, as environmental protection measures (e.g. operating filter facilities with fans) are very energy-intensive.

The projects to reduce fugitive emissions in particular are milestones for environmental protection. The success of measures to reduce fugitive emissions is illustrated by the fact that the suspended particulate recordings taken by the Hamburg environmental authority have been kept at a low level. Since 2012 the Veddel measuring station of the Hamburg Air Quality Measurement Network has been relevant for the official air quality recordings. It is located in the adjacent neighborhood, about 500 m west of the plant premises.

Aurubis has observed the EU target values for arsenic (6 ng/m³) and cadmium (5 ng/m³) that went into effect in 2013 for years already.

The investigations carried out by the Aurubis recording squad on the plant premises confirm the values from the official recordings (see Fig. 1.8 and 1.9).

The best available plant technologies are in operation at Aurubis AG, offering a very high standard of environmental protection. Further emission reduction measures therefore require disproportionately high capital expenditure, but they are still planned and carried out to continuously improve environmental performance. Some of the implemented and planned projects are explained in more detail in the chapter "Commitment to the environment".

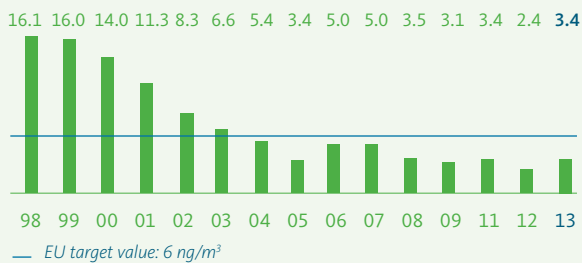
Fig. 1.8: Kaltehofe – an Elbe island near Aurubis



Fig. 1.9: Distinct reduction in immission values (suspended particulates) at the Veddel measuring station

» Heavy metal immissions considerably below EU target value (valid from 2013)

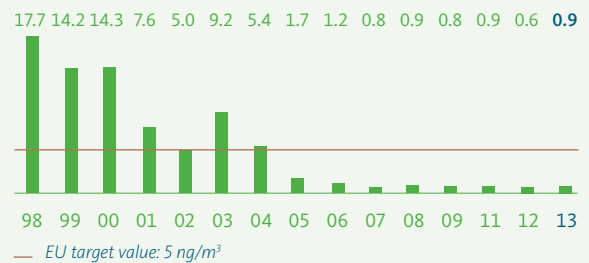
As pollution at measuring site Kaltehofe in ng/m^3



1 gram (g) = 1 billion nanograms (ng)

¹ No additional measurements were taken at the Elbe island Kaltehofe in 2010 since it was declared a water protection area.

Cd pollution at measuring site Kaltehofe in ng/m^3



Source: Hamburg Institute for Hygiene and the Environment



View of the new North Plant warehouse

Air

One of the most important environmental protection milestones in the 1990s was the use of state-of-the-art filtering technologies for all directed emission sources, or smokestacks.

All of the statements in this chapter are based on the current Emissions Report, which is issued annually by the Immission Protection Officer.

The projects to reduce fugitive emissions in particular are milestones for environmental protection. It is therefore crucial for Aurubis to develop innovative technologies for environmental protection and to enter new technical territory in the process.

The new 5,000 m² bulk material warehouse in the North Plant (North Plant warehouse) went into operation in September 2011. The crusher/conveyor was integrated in 2012. The project, which had a capital expenditure volume of about € 7.5 million, reduced fugitive emissions from this area by more than 70 % (compared to 2008) as expected. Separated flue dusts can be processed within the smelter to recover the metals contained in them, so there is no additional waste.

Specific emissions to the air have been reduced significantly since 1990. This is illustrated in the following figures.

Dust emissions have been reduced by 84% since 1990. The national calculation standards for data from continuous measurement institutes have changed since 2011. The

so-called validation value is no longer considered, which leads to higher results. Consequently, dust emissions were actually further reduced, but the values can't be directly compared to the data from the previous years (see Fig. 1.10).

Copper is the main metallic substance in the dust at the Hamburg production site. Specific copper emissions have been reduced by 79% since 1990. This low level was maintained, as the changes compared to the previous year were in the expected range.

More than 70 % of the remaining metal emissions from the Hamburg production site come only from fugitive sources, the majority of which stem from hall ventilation facilities.

Specific lead emissions have been reduced considerably (by 88 %) compared to 1990 and are therefore still at a low emission level. The fluctuations observed are due to the use of various concentrates, operating shutdowns (2013) and the introduction of new products (see Fig. 1.11).

Arsenic is a natural component of copper concentrates. Arsenic emissions have been reduced by about 90 % since 1990 in various steps of the copper refining process and have been at a low level in the last several years (see Fig. 1.12).

Fig. 1.10: Dust emissions at the Hamburg site

Dust in g/t of copper output

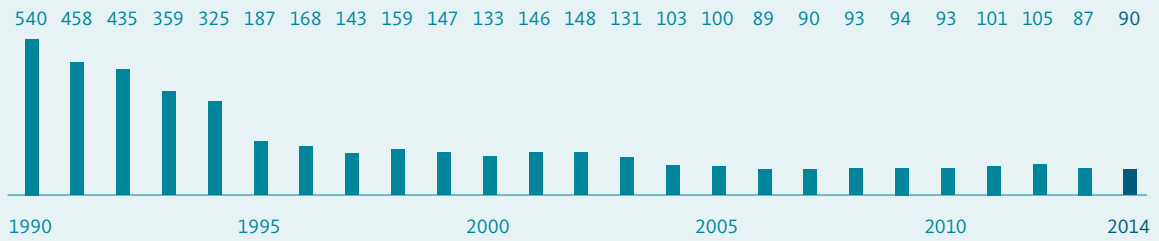


Fig. 1.11: Lead emissions at the Hamburg site

Lead in g/t of copper output



Fig. 1.12: Arsenic emissions at the Hamburg site

Arsenic in g/t of copper output

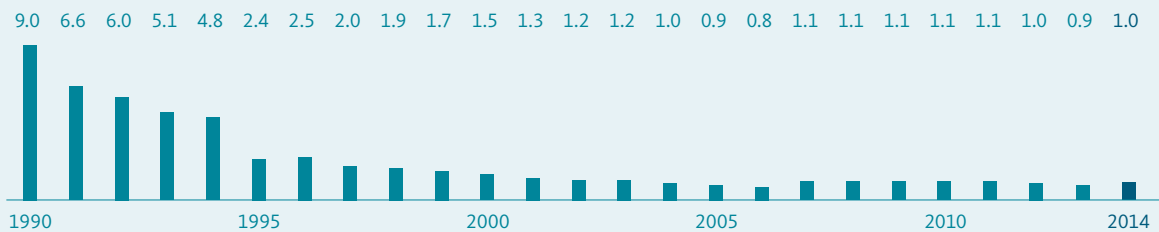


Fig. 1.13: SO₂ emissions at the Hamburg site

SO₂ in kg/t of copper output

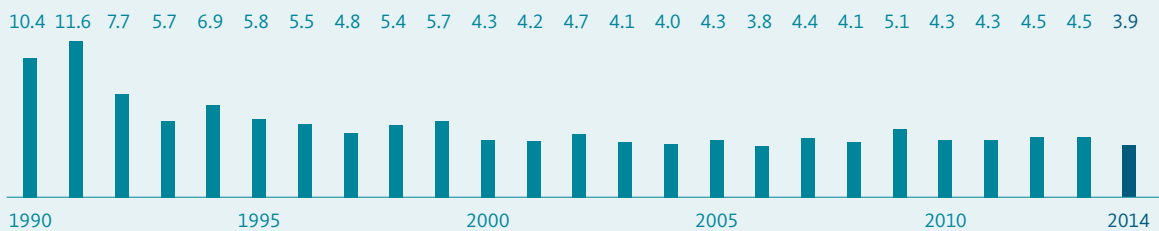
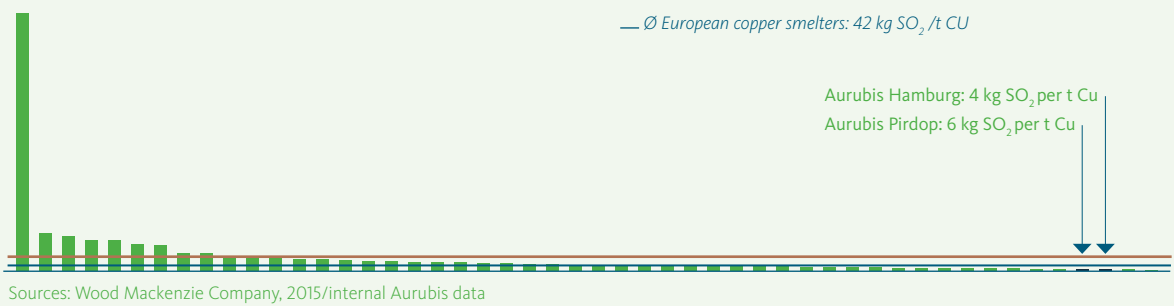


Fig. 1.14: Highest environmental standards worldwide

SO₂ emissions from copper smelters in kg SO₂/t of copper output



Apart from copper, sulfur is one of the main components of copper concentrates. The gaseous sulfur dioxide produced when ore is smelted is converted into sulfuric acid in the sulfuric acid plant using the modern double catalysis process. The sulfuric acid is mainly used in the chemical industry. Specific sulfur dioxide emissions have been reduced by nearly 63% since 1990 and tend to vary at a low level (see Fig. 1.13).

When compared internationally, the Aurubis Hamburg site continues to be a forerunner in reducing specific sulfur dioxide emissions (see Fig. 1.14).

With an input of 1,515,434 t of material and an annual output of 504,660 t of copper, specific emissions for 2014 are as follows:

| Emissions | | Specific emissions related to: | |
|-----------------|------|--------------------------------|---------------|
| | | input material | copper output |
| SO ₂ | kg/t | 1.28 | 3.9 |
| Dust | g/t | 30.0 | 90 |
| Copper | g/t | 4.5 | 13.6 |
| Lead | g/t | 1.3 | 4.0 |
| Arsenic | g/t | 0.3 | 1.0 |

Overall, the emission limits established in the relevant permits for sources of collected and fugitive emissions were strongly adhered to.

Noise

We regularly measure the noise level that emanates from our plant premises. The noise level at the plant boundaries is less than the existing reference values. Detailed noise recordings were carried out and a noise register was developed in 2010. These recordings continued in 2011 to evaluate how effective the implemented measures were.

Additional noise recordings were carried out in new plant sections in 2014.

Further noise recordings are scheduled for 2015 with the objective of reviewing the values established in the noise register.

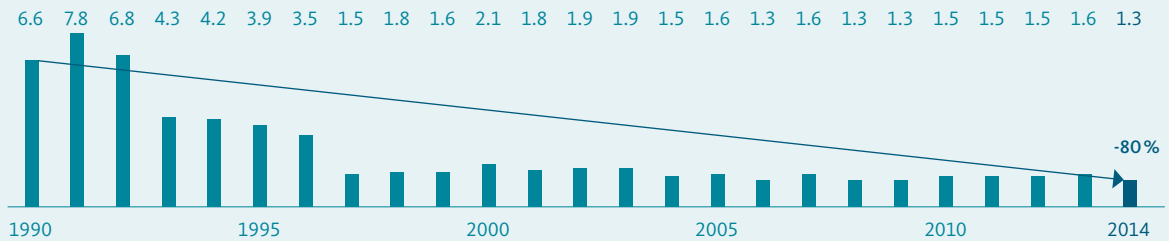
Water

The wastewater from Aurubis AG's entire Hamburg plant is composed of precipitation, indirect and direct cooling water, condensate, process wastewater and desludging water. All of the plant's precipitation is collected and cleaned together with other wastewater (e.g. from the anode casting machine in the primary smelter) and discharged into the Elbe River. Precipitation is also used as cooling water in some cases.

Accumulated process water is cleaned in a separate state-of-the-art wastewater treatment facility. The Hamburg plant has water law permits and observes their requirements. The sanitary water (especially wastewater from kitchens, cafeterias, showers and social rooms) is discharged into the city sewer system to be treated by the city's wastewater treatment plant.

Fig. 1.15: Metal emissions in water at the Hamburg site

Metal emissions in g/t of copper output



The proportion of heavy metals discharged by Aurubis in the Elbe's total load is less than 0.1%. Aurubis has reduced the heavy metal load that is discharged with the wastewater into the Elbe by over 80 % since 1990. Today's average emission value of 1.5 g/t of copper products is evidence of Aurubis' top position in environmental protection, as the company is continuously well below the limits stipulated in the Wastewater Ordinance and thus definitely complies with them. The following diagram shows the total metal emissions of all discharge points (see Fig. 1.15).

The specific wastewater quantities related to input materials and copper production are given in the following table.

Specific metal emissions in water at the Hamburg site

| Year | Specific metal emissions in water related to: | |
|-------------|---|----------------------|
| | input material in g/t | copper output in g/t |
| 2007 | 0.58 | 1.6 |
| 2008 | 0.46 | 1.3 |
| 2009 | 0.41 | 1.3 |
| 2010 | 0.49 | 1.5 |
| 2011 | 0.47 | 1.5 |
| 2012 | 0.42 | 1.5 |
| 2013 | 0.53 | 1.6 |
| 2014 | 0.43 | 1.3 |

Aurubis operates an extensive monitoring network for cooling water discharge. In the process, the discharge temperature, temperature increase and cooling water quantity are measured and recorded at all discharge points. Moreover, the oxygen concentration in discharges that are relevant in terms of quantity were measured continuously. An evaluation system that statistically assesses and documents the parameters determined for the cooling water started up in 2011. Monitoring heat emissions through the cooling water is another measure for improving water pollution control.

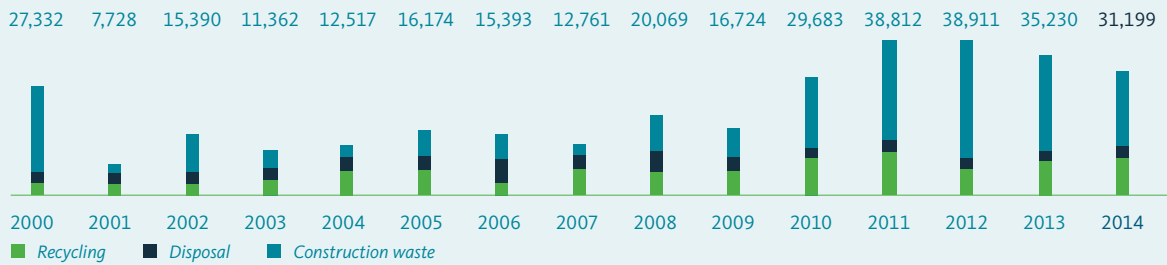
The heat exchangers operated with water from the Elbe were inspected in 2014 to ensure that they were secured against the discharge of materials into the cooling water. The results didn't indicate any significant potential for improvement, nor were any measures implemented.

The quality of the discharged water is increased as a result of enriching the cooling water with oxygen at the significant discharge points by operating turbulence points.

Potable water usage from the Hamburg Water Works in 2014 was at a low level comparable to that of the past few years. Potable water consumption at Aurubis has been reduced by up to 400,000 m³ annually by treating water from the Elbe River for use in the plant.

Fig. 1.16: Disposal methods for waste produced at Aurubis AG, Hamburg

in t p.a.



Facilities handling substances hazardous to water

The specialized audit of the relevant facilities under the Act on Plants Handling Materials Hazardous to Water was carried out by TÜV Nord pursuant to the established audit cycles. The specialized company inspections in accordance with the Water Management Act were also performed by TÜV Nord.

New installations and renovations in the facilities were also constructed pursuant to the applicable state ordinances and accepted by TÜV specialists.

Waste

A total of 110,198 t of waste were accepted and recycled at the Hamburg site in 2014, of which 3,493 t were classified as hazardous waste. A total of 2,675 t of this came from other countries and was registered.

The decrease in the amount of waste accepted for recycling is the result of a decline in the use of sands classified as waste in the primary smelter.

A total of 15% of the waste accepted was used as a slag former (e.g. spent abrasives, sand and excavation residues) and 85% was used for metal recovery (dust, slimes, slags and precious metal-bearing sweeps).

At 93,502 t, the use of metal-bearing secondary raw materials stayed at a constant level.

In calendar year 2014, a total of 31,199 t of waste were generated and directed to waste management at the Hamburg site (see Fig. 1.16). Of this amount, 15,169 t (49%) were classified as hazardous waste. The proportion of construction waste in the total waste volume was 61% in 2014 (2013: 68%). In total, 12,130 t of waste were related to production, of which 2,828 t were directed to waste disposal and 9,302 t to external recycling. The ratio of production-related waste and waste directed to recycling is comparable with 2013.

Most of the waste that is disposed of is slimes from off-gas cleaning.

With an output of 504,660 t of copper output for the year, the specific waste level is 61.8 kg per ton of product (2013: 80 kg/t, 2012: 85 kg/t). The reduction in the specific waste volume is a result of the lower level of construction waste.

A total of 99.2% of the 1.51 million t of material input was transferred to products (without regard to slag products and construction waste) in 2014.

44,555 t of olivine pyroxene rock from the secondary smelter and 21,068 t of slag material from the primary smelter were not marketed as substitute construction material but were recycled as construction material for landfills.

Fig. 1.17a: Specific energy consumption at Aurubis Hamburg

in MWh/t of copper output

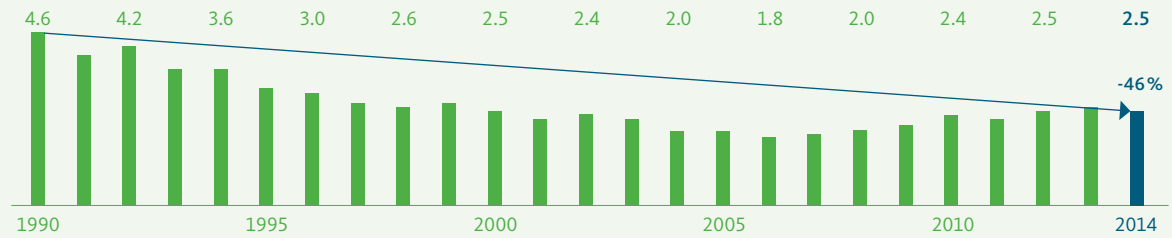
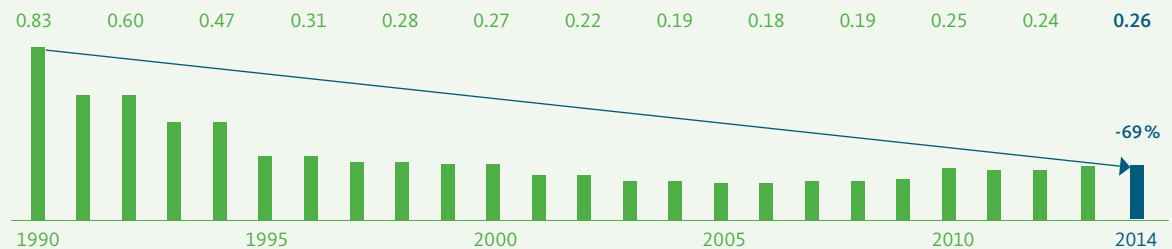


Fig. 1.17b: Specific fuel-related CO₂ emissions at Aurubis Hamburg

in t CO₂/t of copper output



» Reducing energy consumption ensures that we stay competitive and makes an important contribution to climate protection.

Energy and climate protection

We act responsibly towards future generations by economically and efficiently using raw materials and energy. Our main energy sources are electricity and natural gas. In 2014 Aurubis AG consumed a total of 1,263 GWh of energy at the Hamburg site. With an annual copper output of 504,660 t, this amounts to specific energy consumption of 2.5 MWh per ton of copper output (comparison: 2.6 MWh/t in 2013, 2.5 MWh/t in 2012).

Specific energy consumption has stagnated at a high level at the Hamburg site in the past five years. An important reason for this is the higher level of multi-metal recycling, which leads to higher total energy consumption. As a result, energy consumption related to copper production also rises without a significant increase in the copper volume. If primary copper production from ore concentrates to copper shapes or wire is considered exclusively, specific energy consumption in this sector has remained constant

compared to the pre-2010 period. The minimal increase in specific energy consumption in 2013 was the result of the production facility shutdown in September/October 2013. Energy was necessary to operate the facilities during the shutdown period as well, which is evident in the slightly higher specific energy consumption level.

Taking a longer term view, specific energy consumption as a yardstick for energy-efficient production has been significantly reduced at the Hamburg production site in the last few decades, falling by 46% compared to 1990. Fuel-related specific CO₂ emissions have been reduced by about 69% since 1990 due to the economical and efficient handling of energy. With an output of 504,660 t of copper in the calendar year, specific CO₂ emissions from fuels amounted to 0.26 t of CO₂ per ton of product (comparison: 0.26 t CO₂/t in 2013, 0.23 t CO₂/t in 2012) (see Fig. 1.17a and 1.7b).

The calculation is based on CO₂ emission factors from the following sources:

- » for natural gas: GasCalc calculation program
- » for all other fuels: German Emission Trading Office data

Aurubis extensively uses process waste heat to heat buildings, to facilitate the production processes and to generate electricity. The buildings at the Hamburg site are 75% heated by waste heat, for example. One example of an effective energy-saving measure is the installation of several steam turbines at Aurubis Hamburg. The existing pressure drops in the steam pressure levels are consistently used to produce electricity.

Copper production from ore concentrates begins in the primary smelter's flash smelter. Its exhaust gases have a temperature of 1,400 °C and contain about 35% sulfur dioxide, which is processed into liquid sulfuric acid in a so-called contact plant. The flash smelter's hot exhaust gases are initially cooled in a waste heat boiler, producing 60 bar steam. This is first depressurized to 20 bar in the Interplant turbine, which was commissioned in 2014 (see the "Commitment to the environment" chapter). We pro-

duce about 10 GWh of electricity annually in the process. The 20 bar steam serves as process steam for various procedures in the plant. The remaining volume is depressurized to 3 bar in the first stage of another steam turbine. This steam is then used as heating steam in the plant and administrative buildings. Any leftover steam (mainly in the summer months) can be depressurized in the second stage of the steam turbine (condensation stage).

The two turbines at the Hamburg site produce a total of about 20 GWh of electricity annually, which is equivalent to the average consumption of nearly 7,000 households. The environment is spared 11,500 t of CO₂ due to the avoidance of electricity production in power plants (calculated with the 2012 national electricity mix).

The heat content of the hot waste air from the contact plant's air coolers is also utilized year-round and produces 3 bar steam in a so-called waste heat boiler, which flows into the plant network. The waste heat boiler produces around 25,000 t of steam per year and thus reduces CO₂ by 2,000 t p.a.



The new anode slime processing building

CO₂ emissions trading

The third trading period of the EU emissions trading for greenhouse gases started in 2013. Energy-intensive companies in the production industry, such as Aurubis, will now be included in this trading period. These companies were excluded from emissions trading until 2012. Only the thermal power plant was included in CO₂ emissions trading until 2012 since its furnace thermal capacity is over 20 MW. Because of the modified conditions for participation in CO₂ emissions trading, the CO₂ emissions of the entire site, not just those of the thermal power plant, have been reported since 2013.

The allocation application for the third certificate trading period 2013 to 2020 was submitted on time to the German Emission Trading Office in January 2012.

Furthermore, a monitoring plan was developed and submitted to the German Emission Trading Office. It was approved in February 2013 and CO₂ emissions have been documented pursuant to the approved monitoring plan since 2013.

Thermal power plant

The thermal power plant at the Hamburg site converts excess steam, which accumulates occasionally, into electricity using turbines and produces additional 20 bar heating steam as needed using auxiliary boilers. The thermal power plant has been included in the CO₂ emissions trading system since 2005, as the installed furnace thermal capacity is over 20 MW. The Hamburg plant is heated 80% with the waste heat from the smelting process in the RWO's flash smelter. Only the additional volumes due to weather conditions are generated from natural gas. There are strong fluctuations during cold winters.

The CO₂ emissions from the thermal power station amounted to 17,727 t of CO₂ in 2014 compared to 23,508 t in 2013. It had to produce less additional steam due to the improved availability of the RWO (no shutdown). The increase compared to the previous years is the result of the much higher level of steam consumption resulting from the construction of additional production facilities.

Because of the five-year trading period (2008-2012), it is possible for the higher emissions in one of the years to be balanced by lower emissions in the other years.

Fig. 1.18: **Interplant turbine project: generating additional electricity from the primary smelter's off-gas**

- » Installation of a 60/20 bar back pressure turbine in the primary smelter using overheated 60 bar steam
- » The relaxing enthalpy between the two pressure levels 60/20 bar is converted into electricity via a turbine/generator and fed into the 6kV plant network.
- » The decompressed and overheated 20 bar steam is fed into the plant network and used completely as heating and production steam.
- » Generator capacity: 2.8 MW
- » Electricity generated: ca. 10,000 MWh p.a.
- » CO₂ emission reduction: ca. 5,800 t p.a.

Commitment to the environment

At Aurubis, copper and by-products are produced sustainably using state-of-the-art, energy-efficient plant technologies with very high environmental standards in order to conserve natural resources and to maintain a clean environment for future generations. Raw materials and recycling products (such as copper scrap and computer scrap) are almost completely converted into marketable products.

Various projects illustrating Aurubis' commitment to the environment are explained in more detail below.

Climate protection agreement with the Hamburg Senate

In August 2007 the Hamburg Senate approved the Hamburg Climate Protection Concept 2007-2012 and presented it to the public. A major part of the concept was based on the participation of Hamburg industry.

Aurubis AG was one of the first companies to participate in this climate protection concept and implemented a number of projects between 2007 and 2012 that cut CO₂ by 32,000 t each year.

Aurubis is also participating in the follow-up agreement. The objective of the 15 companies that have signed the agreement is a reduction of at least 150,000 t of CO₂ per year. To achieve this goal, Aurubis has pledged to carry out a key project to use additional waste heat in primary copper production. Aurubis will achieve a reduction of 12,000 t of CO₂ per year by implementing all of its planned projects.

Membrane filter press in anode slime processing

Aurubis is developing innovative technologies in the Hamburg plant which have a multiplier effect. One example is the development of a new membrane filter press to dry slimes in an energy-efficient way.

An innovative pilot project in anode slime preparation, which is being funded with € 328,000 by the German Federal Environment Ministry, will reduce energy demand in this area by 35%. The actual operating success is currently being verified. The new processes will lower CO₂ emissions by 460 t per year at the same time.

A membrane filter press that can be heated and evacuated was developed and commissioned in 2013 to dry slimes in an energy-efficient way. The process technology follows the principle of a normal filter press with a packet made of membrane plates. However, the slimes are actually dried using integrated heating plates through which 120 °C process steam flows. The steam-saturated air that forms (exhaust vapor) is suctioned off and condensed using a vacuum, so subsequent gas cleaning is no longer necessary.

Innovations like these contribute to improving our environmentally friendly multi-metal recycling, which is fundamental for future-oriented, resource-efficient recycling management.

The facility was commissioned on August 16, 2013.

Partnership for Air Quality and Low-emission Mobility

In September 2012 Aurubis and 11 other companies of different sizes and from different industries signed the “Partnership for Air Quality and Low-emission Mobility” initiated by the city of Hamburg. The objective of the partnership is to reduce pollution resulting from individual transport. A reduction in nitrogen dioxide emissions, which are caused by road traffic in particular, are a special focus.

To develop ideas to fulfill the targets of the air quality partnership at Aurubis, open workshops were carried out for all employees in May 2013 together with Innovation Management. They focused on the topics “employee mobility” and “efficient vehicle fleets”. The feasibility of additional measures, e.g. improving the plant’s public transport connection, creating locked bike compartments at the nearby Veddel train station and the viability of an e-bike leasing program for employees, are currently being reviewed.

An employee action week also took place during which employees were given the opportunity to look for or offer car pool arrangements in two of the company cafeterias. During another event the Hamburg Transport Association presented its foldable bike and allowed employees to take a test ride.

Interplant turbine

The proportion of electricity from renewable sources should be doubled from about 1.4 % to about 3 % of total energy consumption owing to the installation of the new steam turbine. The Interplant turbine utilizes the difference between the 60 bar steam produced in the flash smelter’s waste heat boiler and the 20 bar heating steam still used in the plant network.

With a generator output of 2.8 MW, the turbine produces about 10 GWh of electricity per year, which is fed into the 6 kV plant network. This prevents around 5,800 t p.a. of CO₂ (calculated with the 2012 national electricity mix).

The turbine was commissioned in the fourth quarter of 2014 (see Fig. 1.18).

New lead refinery

A new lead refinery is currently being rebuilt south of the previous one, which was in need of renovation. The advantage is that the new building can be constructed while the existing one is still in operation.

The capacity of the new lead refinery will remain at a level of 25,000 t per year. The set-up of the new lead refinery was optimized with respect to the material flow and storage, which considerably reduces environmental effects due to the transport and storage of the materials. This includes storing the material in roofed areas and creating a flood-proof storage location for the necessary chemicals. Furthermore, the lead refinery will be more energy-efficient, due in particular to the use of waste heat from burner off-gases.

The new lead refinery was commissioned on May 4, 2015. Additional measures are planned to improve environmental and climate protection at the Hamburg site. These measures are described in the Environmental Program found in this Environmental Statement.

Polluted areas

There are soil impurities typical for industrial areas at the Hamburg plant owing to many years of industrial use. The heavy metal pollution values are so low that no clean-up is required from the authorities' view. The plant premises are mostly paved so that soil impurities cannot mobilize. Furthermore, the groundwater is protected from soil impurities by a water-resistant layer of clay. A sheet pile wall has also been erected in the primary smelter that effectively prevents backwater from flowing beyond the plant premises.

The baseline report for the soil pursuant to the Industrial Emissions Directive has been drafted and is currently being coordinated with the Hamburg Authority for Urban Development and the Environment. The objective of the report is to evaluate the condition of the soil and the groundwater at the site with respect to hazardous substances. If the site returns to its original state, the baseline report serves as evidence and a standard of comparison and is obligatory for Aurubis in the case of significant facility modifications.

Special occurrences

There were no incidents or reportable malfunctions within the meaning of the Hazardous Incident Ordinance during the reporting period. Local citizens were not subject to any risks at any time. No direct environmental damages were determined.

Accident prevention

The alarm and danger prevention plan is currently being updated and will be published soon. The updates take place every three years.

The routine drill to review the alarm and danger prevention plan (Paragraph 4 § 10 Hazardous Incident Ordinance) with the participation of the Hamburg Authority for Urban Development and the Environment as well as the professional fire department took place on November 3, 2014. The scenario was a fire with process gas leakage in the South Plant contact plant. The next drill is scheduled for September 2015. The scenario hasn't been determined yet.

A drill is scheduled for May 23, 2015 with participation of the volunteer fire department. The drill will address hazard prevention in the case of a leaking sulfuric acid tank wagon in the East Plant contact plant.

Fire evacuation drills were carried out in the administrative building, ELNO and R&D on September 9, 2014. The drill was supported by the Hamburg professional fire department. An evacuation drill is scheduled for June 2015 in administrative building 3.

To secure the facility from access by unauthorized persons, a SOLAS drill was executed in the plant on August 28, 2014. The Flood Task Force organized the routine flood protection drill and carried it out with participants at the Hamburg plant on September 20, 2014. The 2015 drill is planned for September.

On March 25, 2014 the Plant Fire Department executed a gas alarm drill for the precious metal smelter and administrative building area. The FACT24 alarm system was also tested in the process.

Environmental Program

The targets set in the context of the Environmental Statement 2014 were reviewed to determine the extent to which they had been achieved and implemented. Discussions with employees, training, audits and quality circles served as a basis for discussing and evaluating the environmental protection measures as well as developing a new environmental protection program for 2015. The results are presented in the following Environmental Program:

Strengthening environmental awareness

| Target | Planned measure | Degree of implementation/date |
|--|--|--|
| Environmental quality circle | Routine discussions and review with works management and the plant and/or production managers | Every two months or as needed |
| Training employees in the primary smelter | Annual training sessions for employees in the primary smelter, secondary smelter, lead plant, precious metal recovery, casting lines, rod plant, ELWO, acid plants and logistics | Implemented in 2015; to be repeated annually |
| Carrying out six training sessions in environmental protection for production and plant managers, especially within the scope of environmental quality circles | Carrying out an annual training session for production and plant managers on the legal situation and correct implementation of provisions as well as clarifying the consequences of non-compliance | Training sessions were successfully carried out again; they will continue in 2015 as part of general continuing education. |
| Plant tours by employees in the Environmental Protection Department | Monitoring operations with regard to environmental effects and compliance of Environmental Protection Department with requirements | Information is provided to the works and plant management in short reports including implementation controlling |
| Strengthening environmental awareness | All employees should be reached by distributing the Environmental Report and providing the environmental handbook with the relevant instructions on the intranet. | Completion of the Environmental Report including Environmental Statement ready for printing by August 2015 |

Reducing dust emissions by 9 t each year

Public contract with the city of Hamburg for 2011-2016 timeframe

| Target | Planned measure | Degree of implementation/date |
|---|---|--|
| Increasing energy efficiency | Constructing and operating a turbine to produce electricity from waste heat in the primary copper production sector (CO ₂ reduction of 5,000 t p.a.) | Target was carried over from 2009 Construction started in December 2011, completion scheduled for 2013; start-up in the fourth quarter of 2014 |
| Reducing fugitive emissions in the secondary smelter | Improving off-gas capture and cleaning in the secondary smelter | Implemented in 2012; auxiliary hood filter on the Big Bag feed is currently in trial operation |
| Reducing fugitive emissions from open areas and roads | Program to optimize the cleaning of roads, halls and storage areas | Implemented by October 2013; optimization continues |
| Reducing hall emissions in the primary smelter | Feasibility study on closing the primary smelter's ridge turret and installing a suction system for the area Agreement with the Hamburg Authority for Urban Development and the Environment in 2014, ongoing | Assessment was issued in 2013, revealing three possible steps to optimize the emissions situation Additional steps are being reviewed for implementation in cooperation with the Hamburg Authority for Urban Development and the Environment. |
| New lead refinery | Replacement of lead refinery with new building | Start-up on May 4, 2015 |

Air pollution control and authorizations

| Target | Planned measure | Degree of implementation/date |
|---|--|---|
| Participation in the Hamburg Senate's climate protection concept Voluntary pledge among Hamburg industrial companies | Implementing projects to cut 12,000 t of CO ₂ | Implemented so far: Interplant turbine as well as conversion of the cracking plant from HD to MD oxygen (total of 4,912 t of CO ₂); additional projects in the planning stage |
| Reducing emissions in the primary smelter | Preparing a concept for a new steam dryer to replace the directly heated drum dryer used up to now | The project has been delayed for now. |

Energy optimization

| Target | Planned measure | Degree of implementation/date |
|---|---|---|
| Increasing energy efficiency | Feasibility study on the construction of a CHP gas turbine | Feasibility study developed in 2012; implementation delayed in favor of other projects |
| Reducing energy demand in precious metal recovery | Pilot project funded by the German Federal Environment Ministry: use of a membrane filter press that can be heated and evacuated when drying metallurgical slimes Reducing energy demand by up to 35 %; reducing ca. 460 t of CO ₂ p.a. | 2013 The membrane filter press was installed; the final work will be carried out in the first half of 2014. Review of the set targets |
| Reducing heat discharge in the Elbe River | Reviewing a concept for using steam from the acid coolers of KAWO line 1 for district heating (about 18 to 60 MW) | Concept preparation in 2015 |

Water pollution control

| Target | Planned measure | Degree of implementation/date |
|--|---|---|
| Reducing the authorized heat input via the cooling water | Measurements of heat-relevant parameters including a data analysis unit (classification unit) to record and assess the heat-relevant data (discharge quantity, temperature increase, discharge temperature, volume measurement, heat input and oxygen content or oxygen saturation for the discharge point Norderelbe and two points in the Müggenberger Canal) as an hourly average or 6-hour moving average | Measurement program has been implemented since March 2011; continuation in 2014. Requirements of the thermal load plan have been implemented since 2013. Water law permit will be issued in 2015. Installation of immission monitoring to track the effects on the Elbe River for three years |

Safety aspects/plant safety

| Target | Planned measure | Degree of implementation/date |
|--------|---|-------------------------------|
| | Participation of Plant Fire Department in TUIS system | Since 2015 |
| | Drill for the alarm and danger prevention plan | September 2015 |

Continuous improvement of environmental management system

| Target | Planned measure | Degree of implementation/date |
|--------|--|--|
| | Recording the environmental targets for the individual plants and separate schedule tracking | Department-specific target documentation since April 2011; additional optimization continues |

Business partner screening

| Target | Planned measure | Degree of implementation/date |
|--------|--|--|
| | Developing and implementing a business partner screening process | Concept developed in 2013 In the future all suppliers and customers will be screened under aspects of sustainability, compliance and tax law, possibly including an in-depth review regarding sustainability and therefore environmental aspects. |

Participation in Partnership for Air Quality and Low-emission Mobility

| Target | Planned measure | Degree of implementation/date |
|--------|--|-------------------------------|
| | Developing a concept for e-bike leasing | September 2015 |
| | Reviewing the feasibility of a better public transport connection (additional Hamburg bus routes or shuttle service to Veddel train station) | |
| | Construction of a bike compartment at the Veddel train station | |
| | Air Quality Action Day | |
| | Reviewing whether the integration of a City Bike Station is possible at Aurubis | December 2014 |

**Key figures for Aurubis AG, Hamburg site,
in calendar year 2014***

Input

Raw materials

| | |
|--|--------------------|
| Copper concentrates | 1,123,585 t |
| Copper scrap/refining material | 46,623 t |
| Other Cu-bearing raw materials | 146,894 t |
| PM-bearing raw materials incl. scrap | 22,760 t |
| Lead scrap and waste | 19,815 t |
| Waste for recycling | 120 t |
| Total TC/RC-earning raw materials | 1,359,797 t |

Auxiliaries

| | |
|---------------------------------------|--------------------|
| Sand and additives incl. cyclone sand | 139,480 t |
| Iron as an additive | 16,157 t |
| Total input materials | 1,515,434 t |

Input material per t copper **3.0 t/t Cu**

Energy

| | |
|---|----------------------|
| Electricity consumption | 549,936 MWh |
| Additional electricity consumed to produce oxygen | 122,706 MWh |
| Natural gas | 491,919 MWh |
| Coke | 78,082 MWh |
| Other energy sources | 20,359 MWh |
| Total energy consumption | 1,263,002 MWh |
| Energy consumption per t copper | 2.5 MWh/t Cu |

Water withdrawal/uptake

| | |
|-------------------------------------|---------------------------------|
| River water | 70,893,000 m ³ |
| Potable water | 267,000 m ³ |
| Precipitation | 339,000 m ³ |
| Total water usage | 71,498,000 m³ |
| Water discharge per t copper | 142 m³/t Cu |

Area used at the Hamburg site

| | |
|--------------------------|------------------------|
| Total plant area | 678,000 m ² |
| Buildings and paved area | 570,000 m ² |
| | (equivalent to 84%) |

Output

Products

| | |
|--|--------------------|
| Copper | 504,660 t |
| Sulfuric acid products as H ₂ SO ₄ | 1,254,270 t |
| Iron silicate stone (incl. granules) | 780,903 t |
| Silver and gold, selenium | 1,499 t |
| Metal compounds (Ni, As) | 2,898 t |
| Lead | 15,060 t |
| Total products | 2,559,290 t |

Waste

| | |
|--------------------|-----------------|
| Recycling | 9,302 t |
| Disposal | 2,828 t |
| Construction waste | 19,069 t |
| Total waste | 31,199 t |

of which hazardous waste 15,169 t

Waste per t copper output **61.8 kg/t Cu**

Waste per t input material **20.6 kg/t**

Conversion into products **99.2%**

Emissions

| | |
|--|-------------|
| Dust | 45 t |
| Dust per t copper | 90 g/t Cu |
| SO ₂ | 1,943 t |
| NO _x per t copper | 436 g/t Cu |
| Direct CO ₂ emissions | 186,572 t |
| of which CO ₂ from fuels | 130,521 t |
| CO ₂ from fuels per t Cu | 0.26 t/t Cu |
| Indirect CO ₂ emissions | |
| from electricity consumption | 405,651 t |
| from additional electricity consumed to produce oxygen | 92,030 t |
| Metal discharge in water | 661 kg |
| Metal discharge in water per t Cu | 1.3 g/t Cu |

Water discharge

| | |
|--------------------|---------------------------|
| Direct discharge | 69,996,820 m ³ |
| Indirect discharge | 48,313 m ³ |

Total water discharge **70,045,133 m³**

Water discharge per t copper **139 m³/t Cu**

* Figures rounded

Basis: data from electricity supplier; emission factor 750 kg CO₂ per MWh

Updated Aurubis AG Environmental Statement 2015

Lünen Site

Aurubis AG's recycling center is located in the south of the city of Lünen about one kilometer from the town hall.

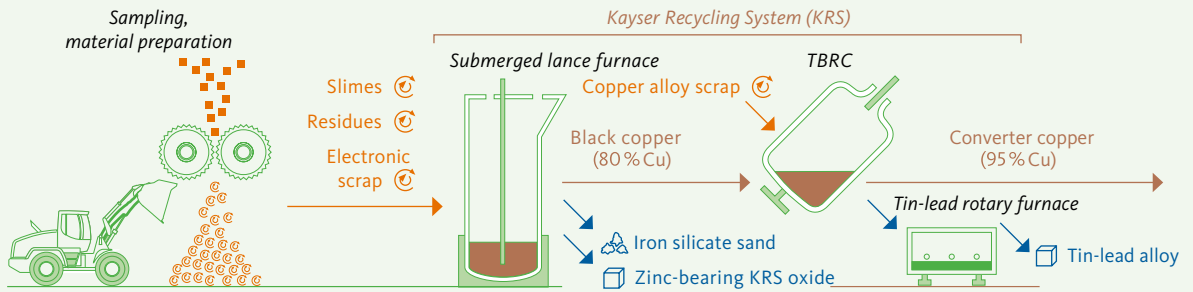
The plant was built and commissioned on undeveloped land between the Cologne-Minden railway and the Datteln-Hamm Canal in 1916 as a branch plant of Hüttenwerke Kayser in Berlin. After the loss of the Berlin plants and reconstruction after the end of World War II, the production facilities were continuously expanded and modernized. After the then Norddeutsche Affinerie AG acquired the majority of Hüttenwerke Kayser shares in 2000, the plant was initially integrated into the company structure and expanded to become the Group's recycling center. Today Aurubis AG's Lünen site is the largest secondary copper smelter in the world with a production capacity of 210,000 t of copper cathodes annually.

Primarily recycling raw materials are used in the smelting units in Lünen, including traditional recycling raw materials such as copper scrap and other scrap, slimes and residues as well as increasingly complex materials, in particular electrical and electronic scrap. The feed materials, which are largely delivered by truck, are first sampled, in some cases crushed and separated in a material preparation plant, and then processed in a multi-step metallurgical process. The copper anodes produced in this way are then refined electrolytically into cathodes, which are the final product at the Lünen site. Additional anode quantities from other Aurubis sites are also processed in the copper tankhouse (see Fig. 2.1).

The core facility for metallurgical processes has been the Kayser Recycling System (KRS) since 2002, which gained a TBRC (top blown rotary converter) in 2011 as part of the KRS-Plus project. The converter copper produced in the TBRC is refined together with copper scrap in the anode furnace and cast into anodes in a casting plant. The anodes are dissolved electrochemically and precipitated as cathodes. Zinc-bearing KRS oxide, iron silicate sand (slag granules), a lead-tin alloy, nickel and copper sulfate as well as anode slimes are produced as by-products of "multi-metal recycling". The anode slime is processed in the Hamburg site's precious metal recovery process.

There are about 590 employees at the Lünen site, around 40 of whom are apprentices.

Fig. 2.1: Multi-metal recycling at the Lünen site



The environmental management system

An environmental management system exists at the Lünen site as well. It has been certified in accordance with ISO 14001 and EMAS and incorporated in a TQM (total quality management) system in connection with quality management pursuant to ISO 9001 since 1997. The TQM system fulfills the requirements of the waste disposal regulation (EfbV) and the law on circulation, withdrawal and environmentally sound disposal of electrical and electronic devices (ElektroG) for the material preparation plant. Since 2013 the TQM has also included a certified energy management system pursuant to DIN EN ISO 50001.

Targets, tasks and organization of the environmental management system

The targets and tasks of the environmental management system correspond to those at the Hamburg site, while the organization takes site-specific features into account.

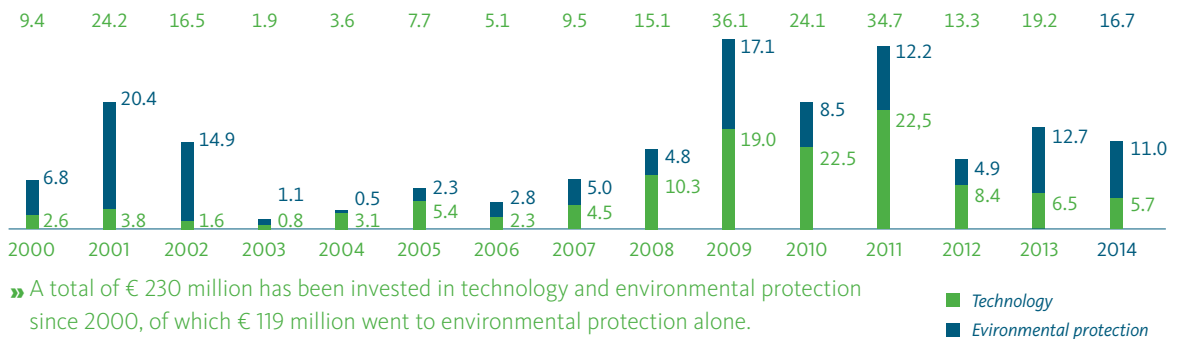
In this respect, the management handbook and its process and work instructions, etc. are related not only to the environmentally relevant issues including accident prevention and health protection, but also quality assurance and energy management measures.

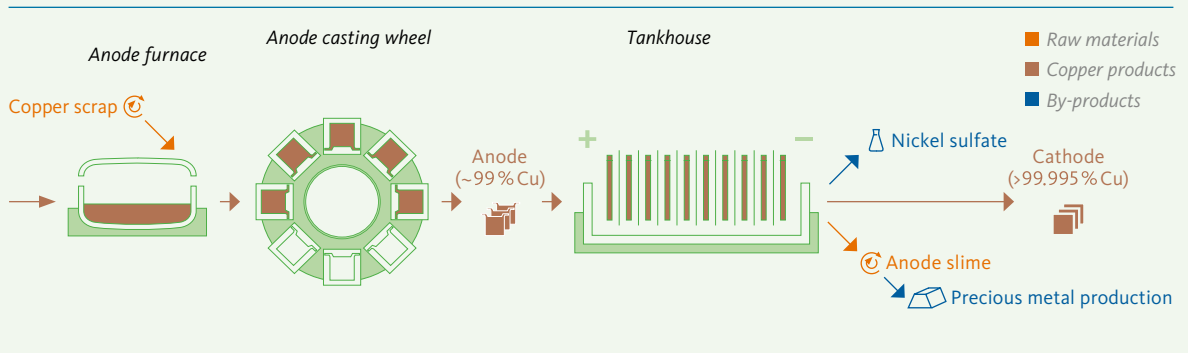
The TQM team consists of the Quality and Energy Management Officer, the Environmental Management Officer and other delegated individuals and employees. The officer functions for

- » immission protection und accident prevention
- » waste management
- » radiation protection
- » specialist companies in accordance with the Water Management Act (WMA)
- » hazardous materials

Fig. 2.2: Capital expenditure of Aurubis AG at the Lünen site

in € million/fiscal year





are carried out by the employees mentioned above. The same applies to the Occupational Safety Specialist, while the health protection measures that extend beyond this are the responsibility of Aurubis AG's company Medical Department.

The officer function for REACH and CLP (Classification, Labeling and Packaging) is carried out centrally for all of Aurubis AG from Hamburg.

Capital expenditure on environmental protection

Capital expenditure on environmental protection also has a high level of significance in Lünen. The Kayser Recycling System (KRS) initially set new precedents with a capital expenditure volume of around € 40 million. Additional capital expenditure followed, especially for reducing fugitive emissions in metallurgical facilities and in the storage and handling of feed materials.

The emission reduction concept agreed on with the authorities for the period 2005 to 2009 was initially estimated at about € 10 million but was then supplemented with additional capital expenditure of € 25 million with additional measures. Significant projects included the e-scrap warehouse and warehouse 4 for dust-forming KRS input materials, comprehensive paving of storage areas and the additional KRS filter 5. Furthermore, environmental protection accounted for € 17.5 million of the investment costs of the KRS-Plus project, which has been implemented in the meantime.

Overall, around € 119 million has been invested in environmental protection from 2000 to 2014 (see Fig. 2.2).

Modernizing the electrolyte cycles

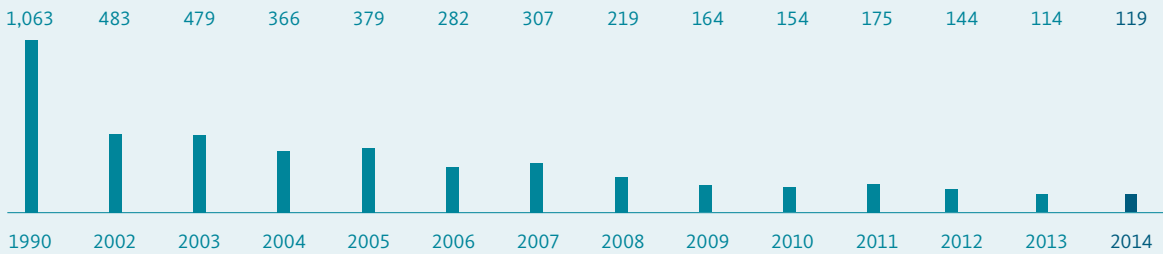
In the course of 2014, a comprehensive concept for modernizing the electrolyte cycles was drafted with the purpose of enabling much more efficient recovery of tramp metals, especially nickel, which will be drawn from the process in a more targeted way.

Furthermore, during this adjustment, a number of modernization measures were planned in the tankhouse and leaching operations, and occupational safety and environmental protection were improved again. These include the relocation of filling processes to the inside of the hall, additional suction equipment and the construction of new, more efficient cooling towers for the leaching operations.

The permit (53-Ar- 900-53.108/13/0303.1-Fr) was issued by the Arnsberg district government on November 24, 2014 and the measures are currently being implemented.

Fig. 2.3: Dust emissions at the Lünen site

Dust in g/t of copper output



Environmental effects

Air

Emissions

The emissions from directed sources (chimneys) are monitored by continuous measuring devices in connection with emission data transfer. Aside from dust, sulfur dioxide, nitrogen oxides, hydrogen chloride, hydrogen fluoride and mercury in the KRS are measured continuously depending on relevance. Other off-gas and dust components are measured manually.

Consequently, the measurements comply with all limit values or fall significantly below them in some cases. The same applies to additional substances listed in the permits, e.g. NO_x, HCl, HF, etc.

In 2014, HF was occasionally exceeded sporadically in the anode furnace. Internal measures were taken regarding the additive dose in order to correct this. Since then, the daily value hasn't been exceeded again (as of April 2015). Emissions of dust and especially dust components (copper, lead, arsenic, etc.) have been considerably reduced at the Lünen site in the past several years due to reduction measures. The figures to the right incorporate the fugitive emissions including storage and handling.

The dust emissions in 2014 were at about the same low level of the previous year.

The new additional filter in the primary smelter was commissioned for the first full year in 2014 and, as expected, further improved the emissions from source 2041. Dust emissions fell from 3,300 kg (2012, only the old filter) to 250 kg (new filter).

The fact that the site's dust emissions nevertheless weren't reduced more is in large part due to new, unfavorable calibrations of the measuring devices in the smelting operations. In the meantime, the dust emissions from the directed sources are at such a low level that they are in the range of the permitted measuring device's margin of error. As a result, higher base levels of dust were observed in the evaluations of all of the measuring devices following the calibrations in 2014. These levels aren't necessarily based on truly higher dust loads.

Another possible emission source results from a suspected chimney effect that arises on the roof of the KRS building now that the rest of the smelting operations building is completely sealed off. Additional analyses will be necessary in order to better quantify this phenomenon. Further measures to clean the exhaust air may be required as well (see Fig. 2.3 to 2.6).

The organic parameters (CO, CH₄, nitrous gases and SO₂), all of which rose last year, decreased significantly again this year.

With an annual output of 193,159 t of copper cathodes and a material input of 424,868 t, the following specific quantities result for 2014:

| Emission | | Specific emission related to input | Specific emission related to product |
|-----------------|------|------------------------------------|--------------------------------------|
| SO ₂ | kg/t | 2.4 | 5.2 |
| Dust | g/t | 54 | 119 |
| Copper | g/t | 5.4 | 11.9 |
| Lead | g/t | 2.6 | 5.8 |
| Arsenic | g/t | 0.1 | 0.2 |

Fig. 2.4: Copper emissions at the Lünen site

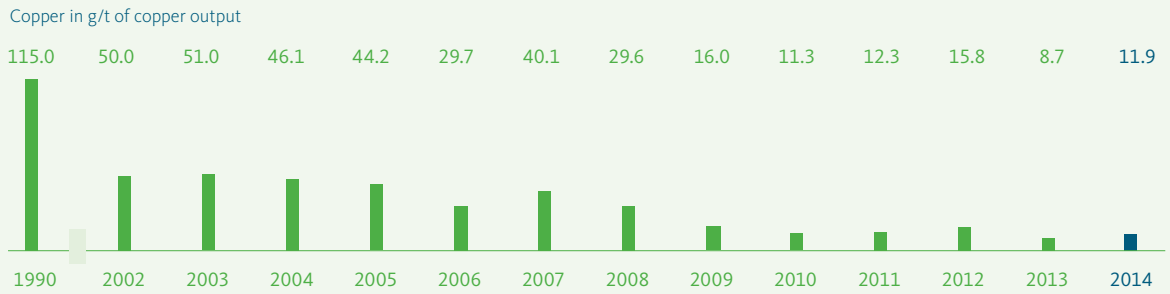


Fig. 2.5: Lead emissions at the Lünen site

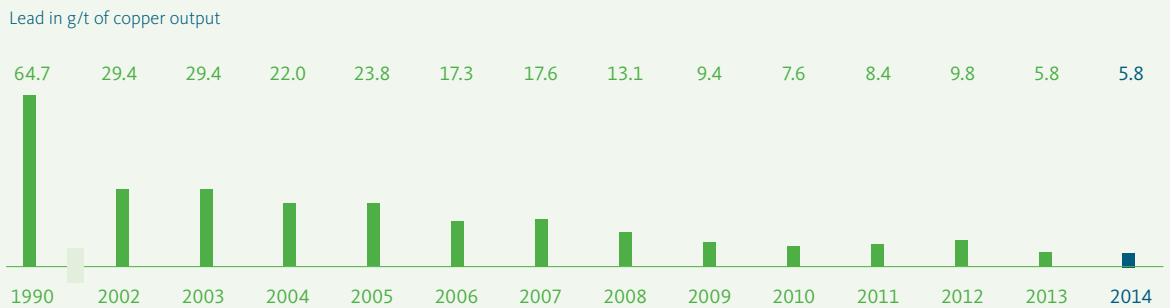
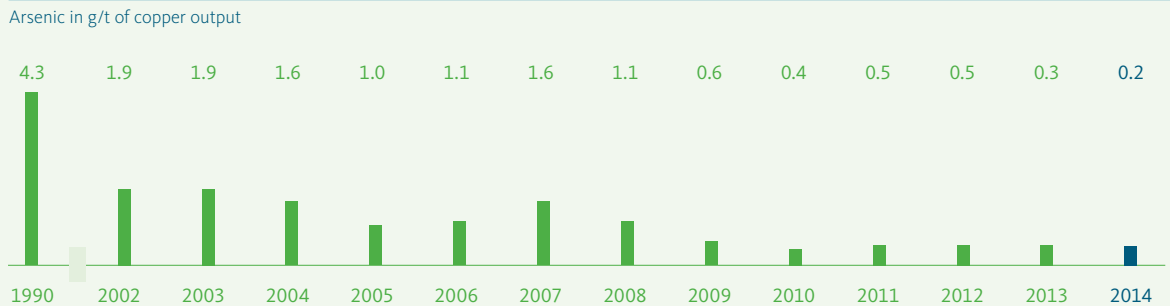


Fig. 2.6: Arsenic emissions at the Lünen site



» Arsenic emissions have been satisfyingly low since 2009 and have been further reduced by about 85 % since then.

Note on the selection of the years presented here: Fugitive emissions in particular have been determined or calculated since 2004 in accordance with the methods used at the Hamburg site. The values for 1990, 2002 and 2003 were estimated in a comparable manner, but there are no reliable values for the missing years.

Immissions

To measure the immissions of dust precipitation including metallic components, the LANUV (NRW State Agency for Nature, the Environment and Consumer Protection) operates a network of 12 so-called "Bergerhoff" measurement points in the area surrounding the Lünen plant, which was established after the TA Luft (Technical Instructions on Air Quality Control) went into effect in 2002 and has been expanded little by little (LÜNE 001 etc., see Fig. 2.7).

While the deposition values of TA Luft 2002 for lead ($100 \mu\text{g}/(\text{m}^2 \cdot \text{d})$), arsenic ($4 \mu\text{g}/(\text{m}^2 \cdot \text{d})$), cadmium ($2 \mu\text{g}/(\text{m}^2 \cdot \text{d})$) and nickel ($15 \mu\text{g}/(\text{m}^2 \cdot \text{d})$) are currently still exceeded at some measurement points, the following reductions are evident on average for the measurement points that were continuously operated in the period from 2006 to 2013 (1 to 3, 5 to 7 and 9 to 11):

| Immission | Development in % |
|-----------|------------------|
| Lead | -36 |
| Arsenic | -63 |
| Cadmium | -43 |
| Nickel | -21 |

Note: The deposition values result from a variety of different factors and thus are not binding limit values for the operation of individual facilities.

The LANUV does not have any validated figures for 2014 yet.

The data pool for a comparable assessment is not sufficient yet for measurement points 12, etc. established by LANUV in 2006 at areas that were subject to more pollution.

Moreover, there has been a LANUV measurement station for suspended particulates (PM_{10}), including components,

on Viktoriastrasse (ca. 100 m northeast of LÜNE 12) since 2008. The position corresponds to that of the plant's calculated immission maximum. Since the KRS-Plus permit procedure, Aurubis has established a supplementary measurement station of the Müller-BBM GmbH in close proximity starting in 2009. Because this station has confirmed the evaluations of the neighboring LANUV measurement stations for years, this separate station will be removed starting in 2015 and the LÜNE 12 and Viktoriastrasse measurement stations will be included instead.

In 2013, higher deposition values were observed, which were attributed to construction activity near the measurement stations. Accordingly, the deposition values in 2014 (after an interim evaluation that ran until October) decreased again, though they aren't at the level of 2012 yet. However, validated deposition values for 2014 aren't available yet.

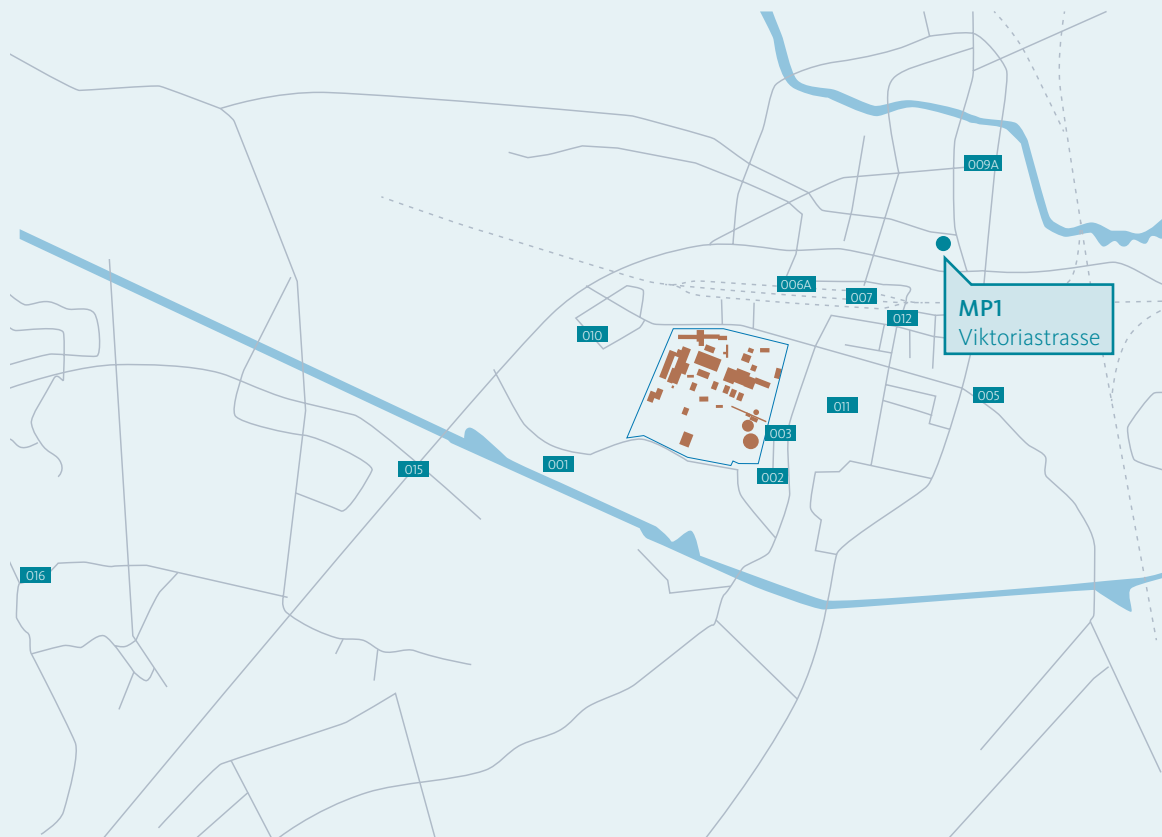
The annual EU air quality parameters for suspended particulates and content calculated by LANUV for 2014 indicate that the levels of PM_{10} and lead are significantly and consistently below the limits, while the levels of arsenic, cadmium and nickel are also considerably below the EU limit values.

For PM_{10} , LANUV shows 10 days on which the limit was exceeded at the Viktoriastrasse measurement station, which is a distinct decrease compared to 2013 (22).

While the level of suspended particulates (PM_{10}) is almost 50 % below the limit, the level of lead is more than 90 % lower than the limit.

The continued improvement for arsenic is especially positive: it was initially 35 % below the limit in 2008 and is now about 60 % below. Cadmium is 90 % below the limit in the meantime, while nickel is over 80 % below.

Fig. 2.7: Locations of immission measurement points near the Aurubis plant in Lünen



"Bergerhoff" measurement points in Lünen

001 Buchenberg

002 Kleine Bergstrasse

003 Bergstrasse 48

005 Bebelstrasse/Süggelbach

006A Rail line/mosque

007 Lünen South freight yard

009A B 236/Lippebrücke

010 Im Wiesengrund

011 Builders' association/building yard

012 Rail line/Kantstrasse

015 Im Engelbrauck/north side

016 Im Siepen


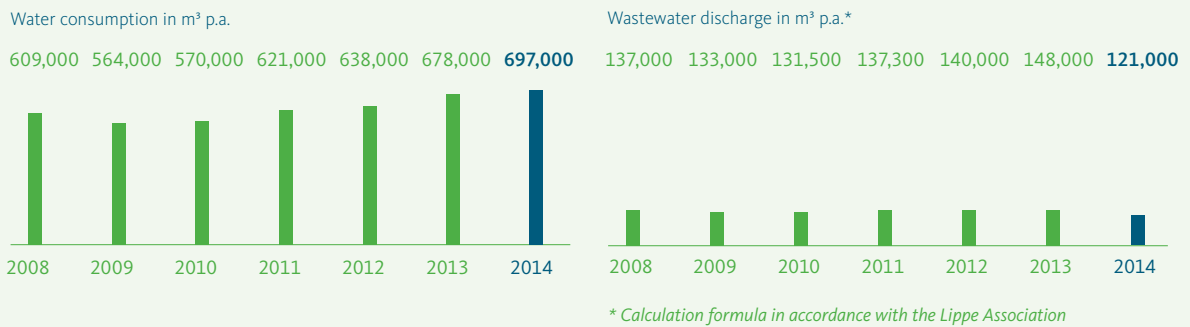
 Aurubis plant building

Fig. 2.8a: Water consumption and wastewater discharge at the Lünen site



Noise

Noise protection measures take high priority in the conception of new facilities in particular. The additional noise pollution in the area in terms of TA Lärm should be marginal, i.e. the levels should be at least 10 db(A) lower than the TA Lärm immission reference values. This requirement was fulfilled in the last few years in all projects, and noise reduction measures were carried out at existing facilities as well.

The measurements carried out in 2012 showed that the reference values relevant for the respective applications were observed at all assessment points predetermined by the authorities. In the areas classified as mixed use areas, this is 60 dB(A) maximum during the day and 45 dB(A) maximum at night.

New sound measurements taken during the authorities' acceptance of the KRS-Plus project in 2013 showed that the TBRC's sound peaks were well below the maximum limits permitted.

Water

Water is used in the Lünen plant for various cooling purposes, including anode cooling and slag granulation, as feed water for the steam boiler, for operating several sweepers as well as sprinkling driveways, plant/storage surfaces and input materials. Particularly the increases in water consumption for the latter measures to reduce dust emissions lead to a continuous increase in water usage (see Fig 2.8a).

In contrast, water discharge decreased in 2014 for the first time since the rainwater retention, treatment and usage facility was commissioned in May 2014. In the future, a large volume of the plant's internal cooling and process water demand will be covered by the collected rainwater, so discharge volumes and water consumption should decline.

Fig. 2.8b: Layout of the two rainwater retention basins, central pump station, treatment plant and service water storage tank 1

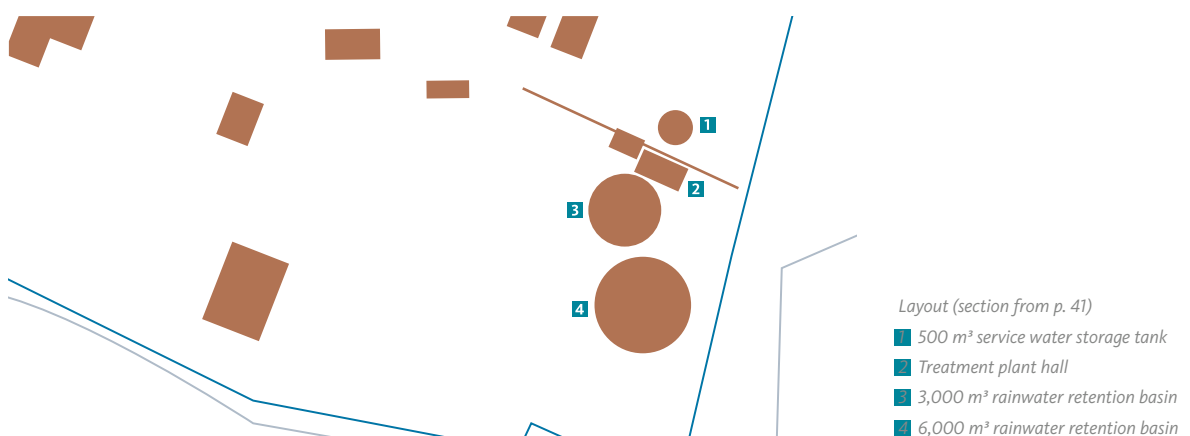


Fig. 2.9: Waste generated at the Lünen site

| in t p.a. | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Packaging and other waste | 1,084 | 1,189 | 1,318 | 1,533 | 1,276 | 1,338 | 909 |
| Construction waste | 242 | 19,701 | 44,487 | 41,531 | 23,740 | 23,706 | 9,914 |
| Spent potlining | 1,089 | 1,279 | 1,503 | 990 | 264 | 343 | 272 |
| Retail products and waste products from the material preparation facility | 7,890 | 7,190 | 4,737 | 5,410 | 5,713 | 6,683 | 4,849 |
| Total | 10,305 | 29,359 | 52,045 | 49,464 | 30,993 | 32,070 | 15,944 |
| of which hazardous waste | 655 | 801 | 1,420 | 830 | 359 | 1,513 | 2,996 |

In the course of this project the plant wastewater, sanitary water and precipitation were separated and the site's sewer system was modernized further (see Fig. 2.8b).

Waste

The waste from the Lünen plant mainly results from packaging from delivered materials, from construction measures and from spent potlining from the KRS, anode furnaces, etc. The externally marketed contingents of the material preparation plant, e.g. aluminum and separated plastics for continued recycling, are also inevitably among the waste from the site, as they do not lose their waste properties due to preparation (see Fig. 2.9).

Packaging and other waste are at the level of the past few years.

Construction waste was much lower in 2014, as there were no projects with extensive excavation work.

Most spent potlining has been recycled internally for several years, i.e. in the KRS, so the volume disposed of externally is decreasing.

The increase in hazardous waste in the last few years is primarily due to construction work.

Like last year, there was no process-related hazardous waste for disposal.

Soil conservation

Restoration measures

Since the plant opened in 1916, facilities producing non-ferrous metals have been operated continuously at the site. In conjunction with war damages, this led to a strain on the soil in the past.

On the basis of comprehensive tests, a restoration plan was developed, which was coordinated with the responsible authorities and has been partly implemented.

The restoration concept includes encapsulating the contaminated area with the help of a sealing wall as well as a drainage facility that requires the discharged water to be purified. Part of the sealing wall and some extraction wells have already been completed in the run-up to construction measures.

The treatment of the restored water was optimized again with additional tests. Because of the sulfate content, the water cannot be discharged via the city sewer system, so direct discharge into a body of water nearby is required.

In late 2014, a restoration agreement was signed with the Unna District describing the further agenda and the steps planned to restore the soil and groundwater at the Lünen site.

According to this, Aurubis agrees to apply for all of the necessary measures by June 2016. A groundwater flow model was developed for the site as a basis for optimizing the measures and creating a monitoring concept.

Preventative measures

Preventative and protective measures have been developed for several decades in order to eliminate future strains on the soil. They are primarily related to the facilities dealing with materials hazardous to water, e.g. the tankhouse and oil storage. Furthermore, the storage spaces for input materials are being designed so that even traces of deposits and components of input materials hazardous to water cannot end up in the soil.

Indirect environmental impacts

Delivery traffic is one of the main indirect environmental impacts. We strive to relocate this as much as possible from roads to railways and waterways.

With the extension of the plant railway and the two-track expansion on the northern plant premises completed in 2011, the anodes delivered to the plant and the cathodes delivered from the plant by train increased distinctly.

Nevertheless, the delivery of most input materials and auxiliary materials with trucks cannot be avoided. The main reason is that the type of delivery is the supplier's choice. About 70% of deliveries arrive through the "Buchenberg" entrance, which is completely located in an industrial area of the Lünen city harbor and is separated from residential areas with an effective noise protection wall.

Energy/climate protection

Energy is required first and foremost for the metallurgical processes (primarily heating oil) as well as for the tankhouse (electricity). Steam for leaching and electrolysis is mainly produced in the KRS waste heat boilers and anode furnaces. There are also two auxiliary boilers fueled with light oil or natural gas.

Production increases in the KRS and anode furnaces were largely compensated for by more efficient energy input, so the absolute consumption of heating oil, coal and coke did not change significantly. In the period from 2008 to 2014, the throughput of recycling raw materials rose from about 255,000 t to about 400,000 t. As shown in Figure 2.12 to the right, this reduced the raw material-related energy demand notably. A slightly declining trend can be observed for 2014 due to an overall shift in the raw material input mix, which requires more specific energy to smelt and refine. The higher natural gas consumption is a result of the TBRC and, in 2014, of the trial conversion of an anode furnace burner from oil to natural gas. The higher electricity consumption is due in particular to a number of new and expanded filters as well as additional drives, etc. One-third of the electricity demand is necessary for environmental protection measures.

On the left-hand curve, the graphic (see Fig. 2.12) shows that the site's absolute energy demand has been relatively constant for 10 years and rising slightly but steadily. When the energy input is shown together with the throughput of recycling raw materials, a more than 30% reduction in the specific energy demand is evident for the same period. This figure shows the multi-metal recycling strategy selected for the Lünen site very concretely. With the same or

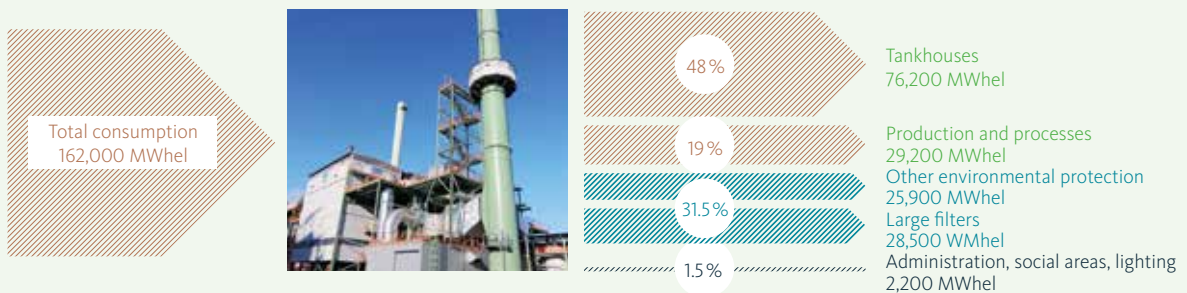
Fig. 2.10: Energy consumption¹ at the Lünen site

| in GWh p.a. | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|------------------|------------|------------|------------|------------|------------|------------|------------------|
| Heating oil | 329 | 288 | 295 | 302 | 291 | 266 | 266 |
| Coal, coke, etc. | 13 | 16 | 10 | 10 | 6 | 13 | 9 |
| Natural gas | 47 | 52 | 49 | 77 | 81 | 77 | 105 |
| Electricity | 139 | 137 | 144 | 151 | 154 | 156 | 162 ² |
| Total | 528 | 493 | 498 | 540 | 532 | 512 | 542 |

¹ Calculated using DEHSt (German Emissions Trading Authority) standards

² Includes 14.8 GWh of internal electricity produced by the steam turbine

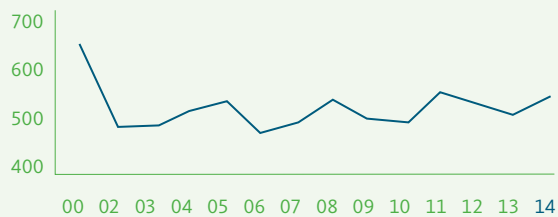
Fig. 2.11: Environmental protection facilities – including those at the Lünen site – are very energy-intensive



About 30% of electricity at Aurubis is used for environmental protection measures.

Fig. 2.12: Successful reduction of specific energy demand due to new technologies and throughput increase

Primary energy input at Aurubis Lünen (in GWh)



Specific energy demand at Aurubis Lünen site in kWh/t secondary raw material input

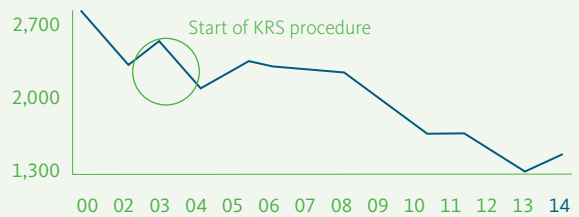


Fig. 2.13: CO₂ emissions at the Lünen site

| in t p.a. | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|--|---------|---------|---------|---------|---------|---------|---------|
| Total CO ₂ | 140,622 | 150,027 | 152,696 | 166,304 | 172,870 | 168,297 | 172,461 |
| Biogenic CO ₂ | 517 | 454 | 653 | 457 | 0 | 568 | 569 |
| Total CO ₂ subject to DEV 2020 ¹ | 140,105 | 149,573 | 152,018 | 165,847 | 172,870 | 164,995 | 169,134 |

¹ 2020 Data Collection Regulation for the third emissions trading allocation period

Fig. 2.14: **Specific energy consumption at the Lünen site**

in MWh/t of copper output

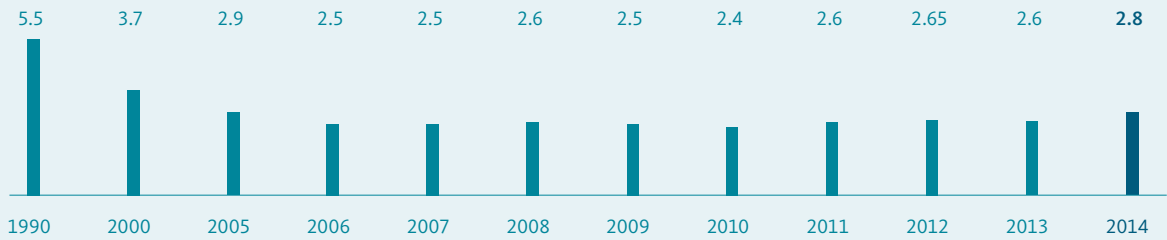
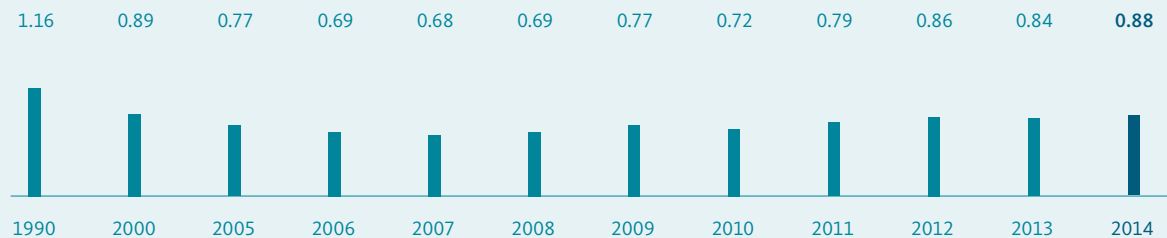


Fig. 2.15: **Specific CO₂ emissions at the Lünen site**

in t of CO₂/t of copper output



even a decreasing cathode copper output, metal should be produced from a high and continuously increasing input of recycling materials. The average copper content in the raw materials is decreasing, while the proportion of by-metals such as tin, nickel, gold and silver is increasing.

The CO₂ emissions were also determined in accordance with DEHSt (German Emissions Trading Authority) standards. The increase in the absolute figures is mainly a result of a higher quantity of complex input materials with low copper contents. This long-term trend led to an increase of more than 10,000 t in 2011 due to the implementation of the KRS project. The total CO₂ emissions include biogenic emissions and emissions from mobile production equipment, i.e. the diesel consumption of plant vehicles which are not considered in emissions trading (see Fig. 2.13).

According to the reporting methods of the DEHSt, the raw materials contribute more to the site's CO₂ emissions than the main energy source SE oil (43% compared to 41%).

CO₂ emissions trading

The third EU emissions trading period for greenhouse gases started in 2013 and applies to secondary copper production at the Lünen site.

Emissions declarations for calendar years 2013 and 2014 were submitted on time to the DEHSt.

Communication with the general public/ special occurrences

There were no incidents or malfunctions with significant environmental effects within the meaning of the Hazardous Incidents Ordinance at the Lünen plant during the reporting period.

As in past years, LANUV analyzed leafy greens from Lünen gardens in 2013 as well. The assessment took place on the basis of Commission Regulation (EC) No 1881/2006 on setting maximum levels for certain contaminants in foodstuffs. This regulation is based on the assumption of regular consumption of the tested foodstuffs which, due to the actual vegetation period of the leafy greens in question, can't actually be achieved by specific plants from the gardens.

The results were published in fall 2014 and an informational event with the local gardeners affected took place on October 9, 2014. One insight from the analyses is that a significant proportion of the pollution is transferred not through the air but through the soil.

In 2014, the consumption recommendation was defined more precisely due to lower contaminant loads. Instead of a general recommendation not to consume the leafy greens, a precautionary recommendation not to consume more than two portions of endive salad (of 250 g each) per week has been issued due to the arsenic levels for endive. The recommendation not to consume kale had to be maintained due to higher (though with a downward tendency) lead values. All other heavy metal levels in the edible plants analyzed are not connected with any medical concerns from an environmental medicine perspective.

Audits and inspections by the authorities

The following environmental inspections were carried out by the relevant authorities in 2014:

- » IED Inspection, HOS Landfill, BR Arnsberg, September 3, 2014
- » Incident Inspection, BR Arnsberg, October 21, 2014
- » IED Inspection, Acceptance of RHZ Filter, BR Arnsberg, December 8, 2014

All inspections were completed successfully. The reports from the IED inspections are publicly available online. Improvement measures that were agreed on are being implemented in close coordination with the authorities.

Environmental program

The targets set in the context of the Environmental Statement 2014 were reviewed to determine the extent to which they had been achieved and implemented. Discussions with employees, training, audits and quality circles served as a basis for discussing and evaluating the environmental protection measures as well as developing a new environmental protection program for 2015. The results are presented in the following Environmental Program:

Air pollution control

| Target | Planned measure | Degree of implementation/date |
|---|--|--|
| Completely closing the storage area on the west side of the plant | Connection and storage hall 2A to close the gap between halls 2 and 3 | The project was delayed to 2017/18 due to new prioritization |
| Continued paving and renovation of storage areas | The West Hall 2 area is commissioned for summer 2015 and the A7 area of the 110 kV station is also supposed to be renovated this year. | In the meantime, nearly all storage areas and transport focuses have been implemented in Water Management Act quality. Older areas will therefore be overhauled and renovated in the medium term. |
| Improvement measures for off-gas treatment in the anode furnace | Off-gas treatment in the anode furnace with a new additive for effective material output as well as a test for post-combustion of off-gas to reduce carbon | Following successful tests, the C-based additive will be permanently blown into the off-gas. The tests for off-gas post-combustion have been discontinued for the time being. The carbon values in the off-gas are currently much lower. |
| Closing the KRS roof ventilation | Analysis of the emission effects after closing the smelting operations' hall (chimney effect) and possibly closing the KRS roof ventilation | Analysis and measurements in the course of the year |

Water pollution control

| Target | Planned measure | Degree of implementation/date |
|-----------------------------|--|---|
| Optimizing wastewater flows | Developing a wastewater/process water concept based on rainwater retention | Rainwater retention is in regular operation without any disruptions. Process water usage within the plant is currently being optimized. |
| | Separate treatment of sanitation water | Details are currently being coordinated for environmental remediation with the responsible authorities. The concept is still being adjusted as part of this coordination process. |

Energy optimization

| Target | Planned measure | Degree of implementation/date |
|---|---|---|
| Increasing energy efficiency, using the steam from KRS waste heat | After reviewing individual options, the use of a steam turbine is planned to generate electricity internally. The aim is to cover at least 10 % of the plant's electricity needs. | The measure has been implemented. The turbine is in full-load operation. The internal electricity utilized will be included in the Environmental Statement in the future. |

Plant safety

| Target | Planned measure | Degree of implementation/date |
|-----------------------|-----------------------------|--|
| Improved organization | Reworking the Safety Report | Potential for improvement in the report was discussed with the Arnsberg district government during the incident inspection and will be added in the course of the year, e.g. systematic documentation of the maintenance of safety-related plant sections. |

Environmental management system

| Target | Planned measure | Degree of implementation/date |
|-----------------------|---|---|
| Improved organization | Computerized integrated management system, first step: data and document management | Document management is currently being implemented and adjusted for the site. The first pilot for the tankhouse is currently in test operation. |

Key figures for Aurubis AG, Lünen site,
in calendar year 2014

Input

Raw materials

| | |
|--|-----------|
| Recycling raw materials | 372,472 t |
| Blister etc. | 38,469 t |
| Copper anodes from other Aurubis sites | 13,927 t |

Total raw materials **424,868 t**

Input material per t copper cathodes **2.20 t/t Cu**

Auxiliaries

| | |
|------------|-------------------------|
| Oxygen | 43 mill. m ³ |
| Rhine sand | 15,800 t |
| Limestone | 2,512 t |

Energy

| | |
|------------------------|-------------|
| External power sources | 147,215 MWh |
| Internal power sources | 14,782 MWh |
| Natural gas, oil, coal | 380,243 MWh |

Total energy consumption **542,240 MWh**

Specific energy consumption **2.81 MWh/t**
Cu cathodes

Water withdrawal/uptake

| | |
|---------------|------------------------|
| Potable water | 690,000 m ³ |
| Precipitation | 7,000 m ³ |

Total water uptake **697,000 m³**

Water consumption/t copper cathodes **3.60 m³/t Cu**

Area used at the Lünen site

| | |
|------------------------------|------------------------|
| Total plant area | |
| (incl. south plant entrance) | 316,000 m ² |
| Buildings and paved area | 247,000 m ² |
| (equivalent to 78%) | |

Output

Products

| | |
|---|-----------|
| Copper cathodes | 193,159 t |
| KRS oxide | 21,295 t |
| Iron silicate sand | 186,407 t |
| Other (tin composite, nickel sulfate, etc.) | 12,593 t |

Total products **413,454 t**

Waste

| | |
|--------------------|---------|
| Recycling | 6,021 t |
| Disposal | 10 t |
| Construction waste | 9,914 t |

Total waste **15,944 t**

Waste per t copper output: 82.54 kg/t Cu

Waste per t input material: 37.53 kg/t

Emissions

| | |
|-----------------|-----------------------|
| CO ₂ | 0.89 t/t Cu cathodes |
| Dust | 119 g/t Cu cathodes |
| SO ₂ | 5.20 kg/t Cu cathodes |
| NO _x | 1.61 kg/t Cu cathodes |

Water discharge

| | |
|-----------------------------------|------------------------|
| Wastewater (indirect discharge) | 121,000 m ³ |
| Water discharge/t copper cathodes | 0.63 m ³ |

Registrierungsurkunde



Aurubis AG

Hovestraße 50
20539 Hamburg

Kupferstraße 23
44532 Lünen

Register-Nr.: DE-131-00035

Ersteintragung am
01. November 2005

Diese Urkunde ist gültig bis
16. Juli 2017.

Diese Organisation wendet zur kontinuierlichen Verbesserung der Umweltleistung ein Umweltmanagementsystem nach der EG-Verordnung Nr. 1221/2009 und EN ISO 14001:2004 Abschnitt 4 an, veröffentlicht regelmäßig eine Umwelterklärung, lässt das Umweltmanagementsystem und die Umwelterklärung von einem zugelassenen, unabhängigen Umweltgutachter begutachten, ist eingetragen im EMAS-Register und ist deshalb berechtigt, das EMAS-Zeichen zu verwenden.

Hamburg, 2. Oktober 2014

HANDELSKAMMER HAMBURG



HK

Handelskammer
Hamburg

Fritz Horst Melsheimer
Präses

Prof. Dr. Hans-Jörg Schmidt-Trenz
Hauptgeschäftsführer

GÜLTIGKEITSERKLÄRUNG

gemäß den Vorgaben der

Verordnung (EG) Nr. 1221/2009 i.d.F. vom 25.11.2009

über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS)



Die Unterzeichnenden, Wolfgang Wielpütz, Dr. Erwin Wolf, Dr. Detlef Nehm und Ralph Meß, zugelassen für den Bereich "NACE-Code 24.44" bestätigen, begutachtet zu haben, dass die Standorte, wie in den aktualisierten Umwelterklärungen der Organisation

Aurubis AG
Hovestrasse 50
20539 Hamburg
Deutschland

mit der Registrierungsnummer DE-131-00035 angegeben, alle Anforderungen der Verordnung (EG) Nr. 1221/2009 des Europäischen Parlaments und des Rates vom 25. November 2009 über die freiwillige Teilnahme von Organisationen an einem Gemeinschaftssystem für Umweltmanagement und Umweltbetriebsprüfung (EMAS) erfüllen.

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

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

Essen, 2015, 10. 06.


Wolfgang Wielpütz
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DE-V-0050


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Ralph Meß
Umweltgutachter
DE-V-0300

TÜV NORD CERT UMWELTGUTACHTER GmbH
DAU-Zulassungs-Nr.: DE-V-0263

Am TÜV 1

30519 Hannover

www.tuev-nord.de



Die TÜV NORD CERT GmbH, Abteilung Energie & Stoffströme bestätigt,
dass das Unternehmen

AURUBIS AG

Bereich Materialvorbereitungsanlage (MV-ZS)

Kupferstraße 23

44532 Lünen

berechtigt ist, die Bezeichnung

Entsorgungsfachbetrieb

gemäß §§ 56,57 KrWG und § 11 Abs. 4 ElektroG

und das Überwachungszeichen der TÜV NORD CERT GmbH bis zum

30. September 2015

für die Tätigkeit

Behandeln von Abfällen

entsprechend der Anlage zu diesem Zertifikat (die Anlage umfasst 2 Seiten)
zu führen. Die Ergebnisse der Überprüfung vom 19.05.2014 sind in dem
Prüfbericht, Berichtsnummer 35140784 dargestellt.

Nächstes Audit:

Mai 2015

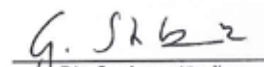
Zertifikat- Registriernummer:

44 714 070790

Essen, den 07.07.2014

TÜV NORD CERT GmbH
Langemarckstraße 20
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- Die Leitung -


Die Sachverständige -
(Dr. Gertrud Steinbrink)

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Editorial deadline

This report describes calendar year 2014. Current events were included up to the editorial deadline of June 2015.

This Environmental Statement comprises Aurubis AG, which includes the Hamburg and Lünen sites.

Photo credits

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Our Copper for your Life

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