

ENVIRONMENTAL DECLARATION 2019

Diehl Metal Applications GmbH

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FOREWORD



With this Environmental Declaration we would like to provide an overview of the environmental protection activities at Diehl Metal Applications GmbH. This information is directed at our customers, our employees, those in the neighboring area, the relevant authorities as well as interested members of the public.

The generation of an Environmental Declaration is part of the EMAS system of the European Union (EMAS = Eco-Management and Audit Scheme) which companies can participate in on a voluntary basis. The system is defined in a European Regulation. The goal is to achieve continuous improvement in the environmental protection measures at companies.

Our Berlin location has been validated in accordance with the EMAS Regulation since 1996. The former Schempp & Decker Präzisionsteile und Oberflächentechnik GmbH decided in December 1994 as one of the first companies in the industry to participate in this system, which was often referred to at that time as the “Eco Audit”. In 2013, the location merged with Diehl Metal Applications GmbH.

During this process, the activities of a part of the company belonging to the Diehl Group in the Motzener Straße were also integrated in order to exploit synergies. The EMAS validation continued to be upheld. Continuously improved environmental

protection remains a focal issue for our company management.

The EMAS system is associated with the regular monitoring of our operational environmental protection measures by means of an accredited environmental auditor. The auditor has also checked the current Environmental Declaration and come to the conclusion that all environmental issues important for the location have been sufficiently taken into account.

Take this opportunity to find out more – we would be pleased to answer any questions you may have.

Dieter Landgraf
CEO

Dr. Mario Amschlinger
CFO

DIEHL METAL APPLICATIONS GMBH

BERLIN/TELTOW – AN OVERVIEW

General facts & figures

Diehl Metal Applications GmbH (DMA) with companies in Berlin (electroplating technology) and Teltow (stamping and plastics technology) has its origins in the company A. & E. Schempp, founded in 1947.

A. & E. Schempp later became Schempp & Decker Präzisionsteile und Oberflächentechnik GmbH, which merged with Diehl Metal Applications GmbH with effect from January 1, 2013. Diehl Metal Applications GmbH belongs to the Corporate Division Diehl Metall.

The participation in the EMAS system and the current Environmental Declaration relate to Berlin and to Teltow as an “extended workbench” of the Berlin location.

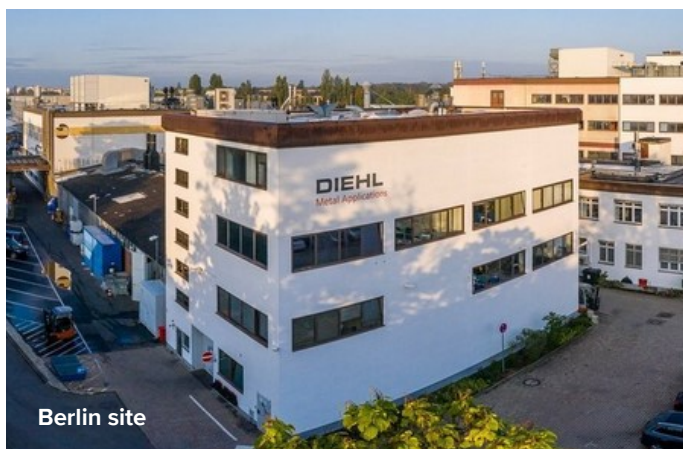
We have been located at the Berlin site since 1979. Currently, the location has around 550 employees; the Teltow site has approx. 210 employees.

The company partly runs in two- and three-shift operations. The Teltow location was integrated into the EMAS system during the course of 2013. Stamped and plastic parts are produced in Teltow. Three leased production halls in an industrial area are used for operating the machines for stamping, plastic injection molding and metal processing (toolmaking).

In the neighboring area, there is a recycling yard and other industrial companies. The machines operated at the Teltow site as well as the activities which take place there are less significant from an environmental and safety standpoint than the Berlin production location, which will thus be outlined in more detail in the following.

The Berlin plot is located in the Steglitz-Zehlendorf district near to the Teltow Canal. The site was expanded in 2012 and a new hall was added.

Across an area spanning more than 41,000 m², there are nine buildings accommodating electroplating machines and other facilities. The built-up area is approx. 13,000 m² in size. According to the land-use plan, the company premises as well as parts of the surroundings are classified as commercial estate, which is to be understood as an industrial area. The neighboring residential areas are actually mixed-use areas, as the apartments there were built as company-owned dwellings. A car dealership with repair shop, a building with a second-hand trader, and various vocational training institutes are all adjacent to the plant. In the immediate surroundings, there are also community gardens, a hardware store, a furniture shop and a supermarket.



DIEHL METAL APPLICATIONS GMBH

BERLIN/TELTOW – AN OVERVIEW

Products

In Berlin, we carry out electroplating processes to coat workpieces – for instance with palladium, palladium-nickel, gold, silver, copper, nickel, zinc, tin and tin-lead – according to customer wishes. The plated parts find application in diverse end products. These range from electrical contacts to housing covers and fittings for furniture.

Operating equipment

To apply coatings, the workpieces are dipped in fluids. To do this, we have more than 35 barrel, rack and reel-to-reel plating machines. As pre- and post-treatments are necessary, plating machines always consist of several baths containing various fluids, depending on the purpose.

Prior to applying the coatings, the parts must be free of grease, dirt and oxidized metal layers. For this reason, degreasing processes – all of which are water-based only – are integrated in the plating machines.

Operating area in the meaning of the Hazardous Incident Ordinance

Since the year 2000, the Berlin location has fallen under the scope of the Hazardous Incident Ordinance (Störfall-Verordnung). The regulation applies to companies if the volume of certain substances exceeds a given limit.

Safety

The Hazardous Incident Ordinance aims at preventing and limiting accidents and the effects thereof. At our location, comprehensive technical and organizational precautions ensure that the possibility of damage is minimized.

The location underwent a systematic safety analysis. From this, a safety report was generated that is now with the Berlin Fire Department and the relevant authorities.

To be prepared for hazardous situations, an alarm and hazard prevention plan was developed which describes the technical and organizational precautions for minimizing the effects of industrial accidents.

In hazardous situations, the plan safeguards the protection of the neighboring area, the employees and the emergency services. The machines and rooms are monitored via the building control system. The notifications are assessed electronically and are collected at a central site. Incoming notifications are processed even after business hours. In addition, a fire alarm system is in place. Alarms are automatically directed to the Berlin Fire Department.

Another important aspect in minimizing risk is that all employees who carry out safety-relevant work are suitably qualified. As part of regulatory contingency planning, certain accident scenarios were taken into account. The voluntary measures taken by us as a result of this led to a further reduction in the potential effects of operational disruptions. All of the measures taken are monitored by means of the joint safety inspections of various authorities.

Machines requiring a permit in line with the Federal Immission Protection Act

In 2001, a permit requirement for electroplating machines was introduced according to the Federal Immission Protection Act (Bundes-Immissionsschutzgesetz) dependent on certain volumes of substances being exceeded. Existing machines had to be shown to the authority. All changes to the machines requiring a permit now have to be reported to the authority, which then decides whether or not a permit is necessary.

ENVIRONMENTAL PROTECTION – THE MOST IMPORTANT MEASURES OF THE PAST FEW YEARS



Closed recirculation systems

Saving water – in electroplating companies this has long been an issue. Even at our old location, we had a system to process the water used for rinsing the treated workpieces before recirculating it to the coating facility. This was the first major water-saving measure which has gradually been introduced since then in many electroplating companies. At the new and present location, such a facility went into operation in 1981; since 2014, we have been operating eight such systems. In this way, around 170 m³ of water per hour is recirculated.

Compressor waste heat

To ensure the provision of compressed air, we operate compressors which, due to their strong heat development, need to be cooled. We have been using the waste heat generated in this way since as far back as the mid-1980s.

Heat recovery (since 1990)

We have been recovering thermal energy from exhaust air streams since 1990. This was possible back then with the use of corrosion-resistant plastic heat exchangers. Over the years, a number of other units of this kind have been set up; this is documented in the Environmental Programs of the past few years. Today, we are also using the waste heat from a cooling machine.

EMAS (since 1996)

As part of our participation in the EMAS system of the EU, our operational environmental protection was scrutinized. Based on the results, the existing organization was further developed. With the aid of the now documented regulations, environmental aspects have been anchored in all important operational processes. The organizational system that has been set up has been audited and validated by an accredited environmental auditor.

ENVIRONMENTAL PROTECTION – THE MOST IMPORTANT MEASURES OF THE PAST FEW YEARS

Cyanide-free zinc electrolyte (since 1997)

Since the end of 1997, a cyanide-free zinc electrolyte has seen increasing use. This brings a number of advantages with it: The use of a highly poisonous substance is avoided, the waste water generated thereby does not need to be decontaminated with hypochlorite, and the pollution of waste water with adsorbable organically bound halogens (AOX) is reduced.

Certification according to DIN ISO 14001 (since 2004)

In addition to validating our environmental management system according to the EMAS Regulation, we have also been certified according to DIN ISO 14001 since 2004. We opted for this additional certification due to frequent inquiries from our customers who are familiar with DIN ISO 14001 but not the further-reaching EMAS Regulation. The specifications of DIN ISO 14001:2015 and the EMAS Regulation adapted in August 2017 are already fulfilled.

Material recovery of electroplating sludge (since 2005)

In March 2005, we put a system into place for the material recovery of the electroplating sludge generated during waste water treatment. The zinc, nickel, copper and iron contained in the electroplating sludge are drawn from the sludge and recycled.

For the precious metals gold and silver, environmental credits have been awarded since 2011.

Cyanide-free degreasing (since 2006)

In the course of 2006, it was tested whether the application of cyanide-free degreasing is possible. The tests were predominantly successful, but not for electrolytic degreasing / descaling. Most degreasings were subsequently converted to harmless substances, which also has a positive effect on the resulting and has sewage to be treated.

Optimization of the waste water facility (2009, 2010)

In 2009 and 2010, we optimized the waste water treatment facilities with respect to the type and volume of chemicals used. This was made possible by means of an analytical process that has now become routine.

Additional exhaust air purification (since 2011)

Since 2011, exhaust air purification facilities have increasingly been installed at emission sources. The first facility of this kind was already put into operation back in 1987. Today, we operate 27 such facilities. Existing limit values are adhered to even without washers. The activities of the past few years have been carried out as precautionary measures in case of operational disruptions.

EMAS for Teltow (since 2013)

In 2013, the EMAS system was extended to include the Teltow site, with the aim of further strengthening our environmental protection activities at this location, too.

LED lighting (since 2014)

Since 2014, we have been increasingly using LED lamps for new lighting or for lighting which needs replacing.

Rectifier 2018

Energy savings can be achieved through the use of energy-efficient rectifiers, which has already prompted the replacement of systems.

Compressed air supply 2017-2019

In 2017, planning began for the construction of a compressor house with the aim of modernising the site's compressed air supply. The measure, which began in 2018, is expected to reduce the energy requirement for compressed air generation by approx. 30 % (corresponding to approx. 1.3 GWh/a). Another goal is to increase heat recovery by approx. 0.96 GWh/a, which will reduce the recovery of compressor waste heat is more than doubled.

GUIDELINES FOR ENVIRONMENTAL PROTECTION AND SAFETY

Guiding principles and assessment criteria

The following guidelines determine our company activities in the areas of environmental protection and safety. On the basis of these principles, we further develop operational environmental protection, including safety, by means of technical and organizational measures. These principles also drive the continuous improvement process. The guidelines were developed by our Environmental Committee and also represent a gauge by which we can assess our activities.

1

The future of the human race, society and industry depends on the ecological balance of nature. Each and every one of us is therefore called upon to see how our actions fit into the bigger picture, and thus to assume responsibility.

2

In all its business activities, Diehl Metal Applications GmbH is committed to protecting the environment. We do this in the belief that no competitive disadvantages shall arise as a result and that our commitment will be supported by the market.

3

In our business decisions, environmental and safety-relevant aspects are taken into account. We encourage our employees to actively engage in environmentally- and safety-conscious behavior by means of practical suggestions and comprehensive information. To implement our guidelines for environmental protection and safety, the active cooperation and self-initiative of the workforce is an important prerequisite.

4

At Diehl Metal Applications GmbH, all necessary measures are taken to prevent or eliminate negative effects on the environment and to continuously improve energy efficiency – right from the conceptual design of work processes and products. The environmental impact should be reduced as far as state-of-the-art technology and economic viability allow.

5

All necessary technical and organizational precautions are taken to prevent accidents and operational disruptions. The primary goal is to ensure that damage to people and the environment does not even arise in the first place as well as to prevent disruptions. If disruptions should nevertheless occur in spite of all preventive activities, the impact to people and the environment should be minimized with appropriate measures.

6

We take into account the demands of our employees, customers, suppliers, nearby residents as well as other relevant stakeholders when making business policy decisions in order to safeguard company success in the long-term.

7

In the context of its social responsibility, Diehl Metal Applications not only feels bound by the legal provisions but also adheres to self-imposed obligations.

8

Environmental protection and safety should be credible and verifiable by means of: open communication at all operational levels, provision of information to customers and interested members of the public, and a cooperative relationship with authorities. Furthermore, we are committed to monitoring the success of our measures by means of environmental protection and safety audits.

PRODUCT-RELATED ENVIRONMENTAL ASPECTS

Detailed customer requirements

Our customers provide numerous specifications which we have to comply with. In so doing, we only have very limited decision-making scope in terms of environmentally relevant concerns. Besides specifications on product design, requests and requirements relating to packaging and post-processing steps also need to be taken into account. The subsequent use of the workpieces which we produce or process is not always known to us. Our sphere of influence is thus limited.

Attempt at influencing indirect environmental aspects

Nevertheless, we try to design products that take into account environmental protection factors. This also applies when it comes to the choice of packaging material. Upon receiving inquiries, we always check to see if a negative environmental impact can be avoided or minimized by making changes to the product (e.g. tin instead of tin-lead coatings, additional drip holes). This checking process is carried out by Sales in cooperation with the relevant departments. If improvement possibilities are determined, these are outlined to the customer.

Packaging

Sometimes customers provide special transport systems (cartons, crates made of wood, plastic or metal, intermediate layers). In addition, pallet cages and other transport containers are used.

The parts to be coated are supplied by the customer in the named transport systems and packed into these again following the plating process. Besides refill systems, disposable packaging is also used.

Energy efficiency

Our considerations are aimed at reducing the energy used to manufacture our products. One way in which we can influence this is to reduce generously dimensioned layer thicknesses, thereby decreasing the energy required to produce the surfaces. Energy savings can also be achieved by seeking agreement with the customer with respect to omitting the tempering of plastics.

Fate following use

A large share of the products is installed by our contractual partners into electrical devices and vehicles. By means of electronic waste and end-of-life vehicle disposal, products can be collected and, if necessary, dismantled into individual parts following use. Material recycling is not always possible. However, electronic waste and end-of-life vehicle disposal enable material flows to be controlled, thereby preventing avoidable environmental damage.

DAS ORGANISATIONSSYSTEM FÜR UMWELTSCHUTZ UND SICHERHEIT

The following organizational chart provides an overview of the existing business areas, departments and

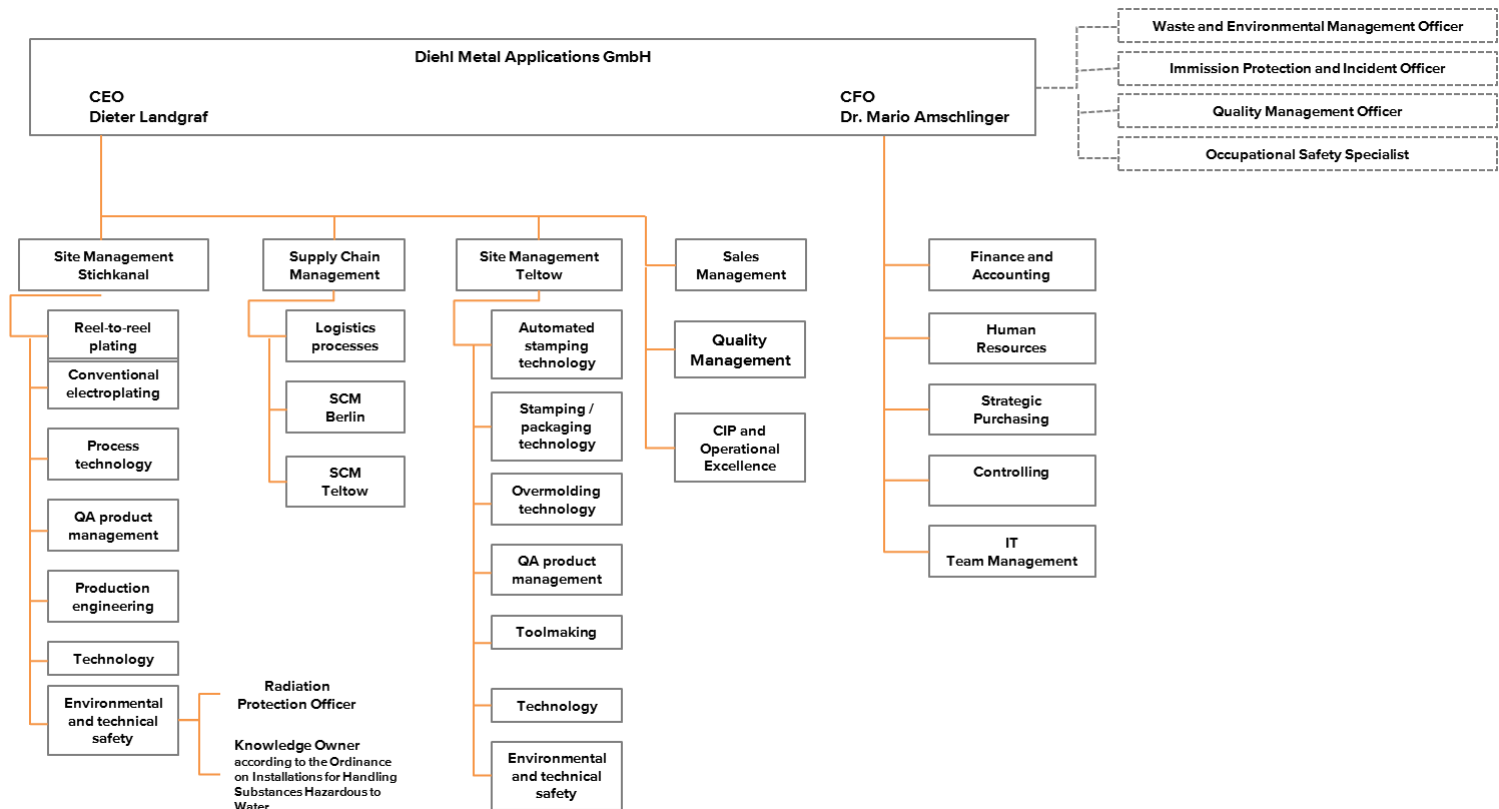


Chart: Operational areas and environmentally relevant functions at Diehl Metal Applications GmbH, Berlin and Teltow ("extended workbench")

Task distribution

The responsibility for complying with environmental legislation requirements is borne by the entire Management Board. By means of the internal distribution of tasks, this responsibility is extended to other employees. This responsibility is defined in our Handbook for Environmental Protection and Safety as well as through job descriptions.

Central role for the area of environmental and technical safety

The responsibility for the proper installation, maintenance and further development of the environmental management system lies with the Head of Environmental and Technical Safety, who has appropriate powers and is supported by a deputy in fulfilling the tasks resulting from this authority.

Alignment to DIN ISO 14001:2015

In 2016, the management system was adapted to the new version of environmental management standard DIN ISO 14001:2015, which was published in November 2015. Through this, the specifications of the EMAS Regulation adapted in August 2017 are likewise fulfilled.

ORGANIZATIONAL SYSTEM FOR ENVIRONMENTAL PROTECTION AND SAFETY

Environment and technical safety tasks

The area of environmental and technical safety performs a number of other important functions with respect to operational environmental protection. The Head of Environmental and Technical Safety is appointed as the Environmental Management Officer and as Waste Officer. The Hazardous Incident Ordinance requires the designation of an Incident Officer. This function is performed by the deputy head of this area. This person is also appointed as Occupational Safety Specialist and as Immission Protection Officer, as demanded by the letter of permit. The specialist environmental expertise concentrated in the area of environmental and technical safety is made available, as necessary, to all relevant parties in the form of information and advice.

Communication

Environmental protection topics are outlined routinely during the weekly technology meetings and, if necessary, in the departmental meetings. Information obligations are firmly anchored in the Handbook for Environmental Protection and Safety as well as by means of standard operating procedures.

Training

Acting in an environmentally conscious manner requires relevant knowledge and a sense of responsibility. Employees need to be aware of the potential impact of their work on the environment, the possible consequences of deviating from defined work processes and the benefits of improved operational environmental protection. The relevant knowledge is generated and reinforced by means of continuous training measures. Conveying this knowledge leads to greater awareness. It also results in the ability to recognize environmental risks as well as solve any problems in a competent way.

Routine training and measures for particular circumstances

We make a distinction between routine training and training for particular circumstances.

The latter is initiated, for instance, upon:

- the entry of new employees
- the filling of vacancies
- changes to tasks or expansion of responsibility
- new legal regulations
- organizational changes
- new technologies and processes
- detected vulnerabilities

Employee participation

If new organizational regulations are intended to be put into place (e.g. new work instructions), the employees affected by these are included in the generation thereof. Ideally, the process is carried out completely by those on whom it will subsequently have an impact.

New environmental and safety programs are developed with the involvement of the employees, who are included with the specific aim of seeking improvement potential. Prizes are awarded for proposals brought forward by employees via the company suggestion scheme if these are then subsequently implemented. Suggestions from employees have so far largely concentrated on technical improvements, thereby reflecting the very good level of training received.

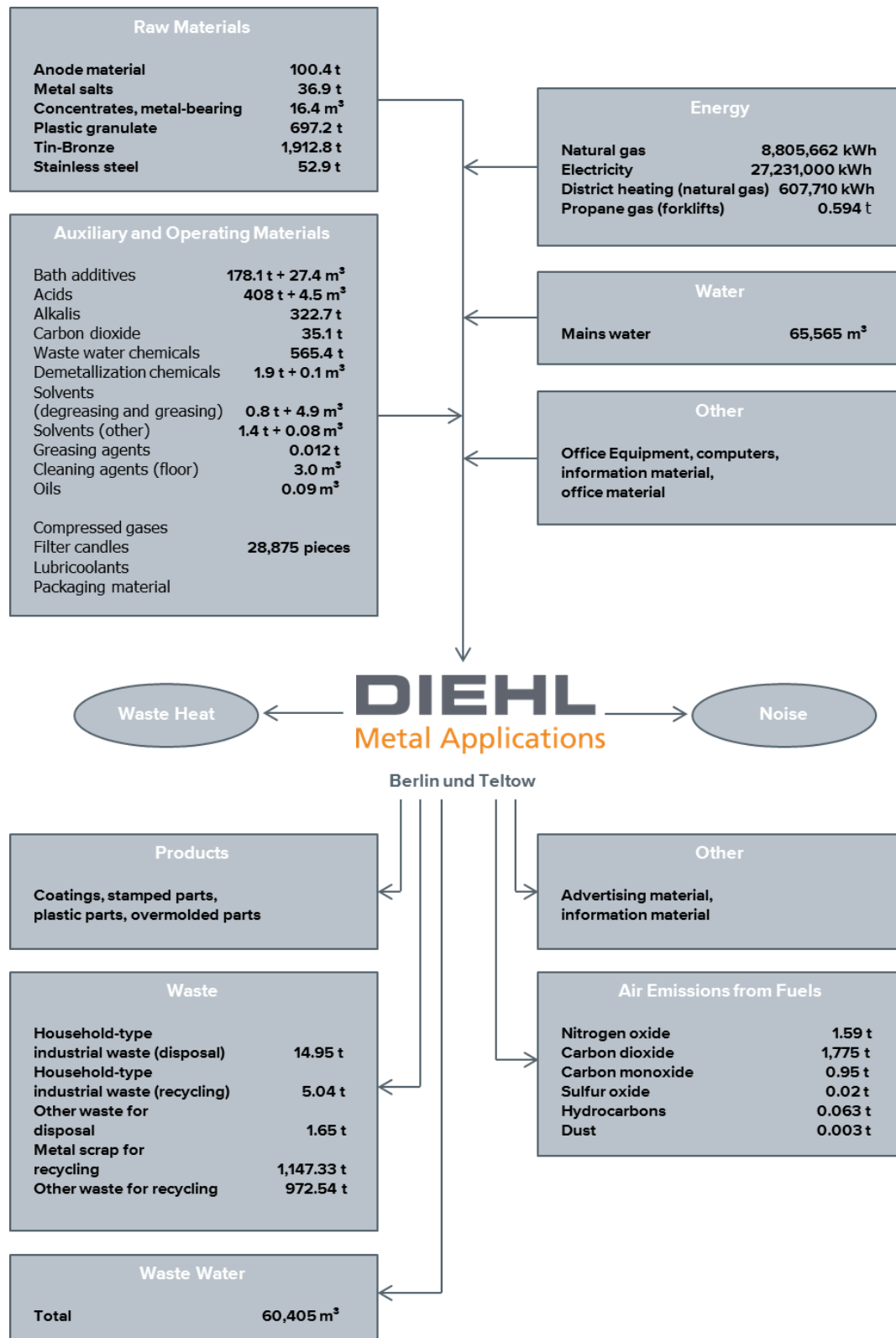
Environmental audits for system control

To monitor the functionality of our organizational system, we regularly carry out internal environmental audits. Such an environmental audit preceded this Environmental Declaration. These audits allow risks and improvement potential to be recognized and the fulfillment of environmental legislation requirements to be checked. Corrective measures are derived from this which contribute to the continuous improvement of operational environmental protection. The regular performance of environmental audits forms a prerequisite for validation according to the EMAS Regulation.

INPUT UND OUTPUT – AN OVERVIEW

The following diagram provides an overview of the input and output of the operations in Berlin and Teltow in 2018. This offers an initial insight into the naming of the substance groups. Some of these groups will be outlined in more detail in the following chapter.

Numerical data on the products manufactured by us cannot be provided. Merely giving information on quantities would involve documentation of numerous small components. Far more meaningful for surface coating would be the total mass deposited on metals. However, the effort required to do this would be enormous and hardly justifiable.



IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Environmental Effects

Every production operation is associated with environmental effects – not only concrete on-site production which generates waste, waste water and air pollution, but also the upstream manufacturing processes and transport. Each industry has its own issues; on top of these, there are also unique company-specific aspects. We determine and assess the environmental impact associated with our activities on a regular basis. Major or potentially major environmental effects that exist or may possibly arise in the event of damage are as follows:

- Consumption of resources (materials, water, electricity, natural gas)
- Generation of waste
- Generation of waste water
- Emissions into the air
- Noise
- Air, soil and groundwater pollution in the event of accidents and fires

To avoid accidental release of substances, comprehensive technical and organizational precautions have been taken, in particular for the Berlin location. Fume scrubbers, for instance, are available for removing harmful substances. Leaking liquids are collected in retention systems. Machine states are monitored and errors are reported via the building control system. Fire alarm systems with automatic notification to the fire department are in place. Work instructions are available which contain specifications for safe processes. Only qualified personnel can carry out safety-relevant work.

Core indicators in accordance with EMAS III

In the following, we will outline the some of the above-mentioned aspects in more detail. Information will be provided later on the core indicators which need to be determined in accordance with the EMAS Regulation.

INPUT MATERIALS

Hazards due to accidents and careless handling

The diagram under the heading “Input and Output – An Overview” provides information on the raw, auxiliary and operating materials used by us in 2017. Some of these have been summarized into groups. Over 300 individual materials were recorded. Among the substances are those which may cause risk or damage to the environment in the event of accidents or careless handling (e.g. toxic, flammable or water-polluting substances). To prevent a negative environmental impact, we have put technical and organizational measures into place. Some of these measures are required by law, others are voluntary.

Storage

Risk minimization begins with proper storage. Prior to distribution in the company, the substances are located in one of our five warehouses (four of these are in Berlin). The areas are separated from each other by built-in partitions, as certain substances cannot or should not be stored together. In Berlin, we have special rooms for flammable substances, solids and for acids/alkalis as well as a storage cabinet for oxidizing substances.

To limit risk, maximum storage volumes have been defined for certain substances. The warehouses are always kept closed. Warehouse administration is computer-based. Hazardous substances are issued by specially trained warehouse personnel only.

Transport

The transport of substances to their place of application is the responsibility of a special department in Berlin, namely “Intracompany Transport”. These employees have likewise received special instructions and training. There are work instructions available which guarantee the safe transport of the substances. To increase the level of safety, containers filled with hazardous substances are placed in catch basins during transport.

Development of consumption volumes

The consumption volumes changed for some substances in 2018, partly leading to opposing situations. What is important to note is that the products manufactured vary from year to year in terms of type and volume, resulting in different consumption volumes even at the same level of machine utilization.

IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Special input substances

We wish to provide separate information on one of the groups of substances used in Berlin. The substances listed in the Input Table under the collective name “metal salts” and “bath additives” also include cyanides.

Cyanides

Cyanides are very poisonous. They should not enter the environment, for instance via waste water, as the microorganisms used in public sewage plants may be damaged. This is prevented, however, by our waste water treatment facility. Our employees are also exposed to risks. However, they know these risks and act in a professional way, as they are all trained personnel.

The use of cyanides has been reduced over the past few years due to various measures:

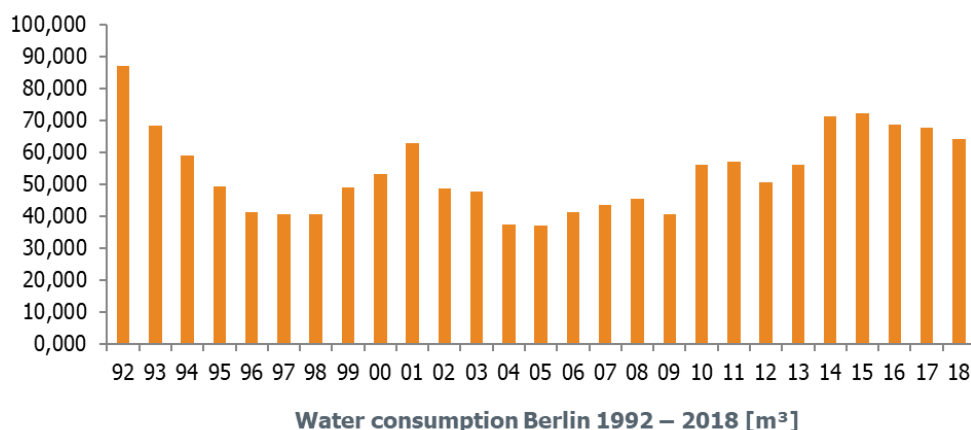
- The reel-to-reel plating machines previously had degreasing baths containing cyanide. These have now been switched entirely to the use of cyanide-free chemicals. In the area of conventional plating, too, cyanide-free degreasing systems are increasingly being used.
- For the manufacture of copper and zinc platings, there are also cyanide-free processes. Since the end of 1997, a cyanide-free electrolyte has been used increasingly for zinc plating.

WATER

Operational purposes and consumption

Water is needed for: rinsing the workpieces, the preparation of baths, rinsing our gravel filters, the regeneration of the ion exchangers of the circulation water units, floor cleaning, maintaining the outdoor areas, the social area.

In 2018, fresh water consumption at the Berlin location amounted to 64,062 m³. In Teltow, the water consumption in the area of Production is very low. There, the total consumption amounted to 1,500 m³.



Differentiated categorization

At the machines which consume fresh water, there are water meters recording the consumption of over 20 machines and allocating this consumption to the relevant consumers.

The building control system records consumption volumes, so that disruptions can be detected and eliminated.

IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Savings

The water consumption is reduced by a number of measures, such as the use of circulation systems for regenerating rinse water. Another conventional measure is the use of rinsing cascades. The rinsing process consists of several steps here. A workpiece which has just been plated and needs rinsing is given sufficient drip-off time over a bath before being rinsed in a tank. Under certain circumstances, the water generated in this way can be returned directly to the plating bath to compensate for evaporation losses.

Additional rinsing steps then follow which always use the water from the next rinsing stage. Finally – and mostly in the third stage – clean water is used from the circulation systems.

The previous Environmental Programs likewise contained measures for saving water.

In the past, only pumps with seal water were available as hot water circulation pumps. New pump generations without seal water were tested and have now replaced all water-cooled pumps.

Pattern of consumption

The actual water consumption fluctuates from year to year, as savings measures take effect and the production changes in terms of type and volume. Against this background, water consumption in 2018 is slightly lower than in 2017.

ENERGY

Electricity, gas and district heat

At the locations, electrical energy, natural gas and district heat (Teltow) are used. Some of the consumption is recorded in a differentiated way and allocated to the individual facilities.

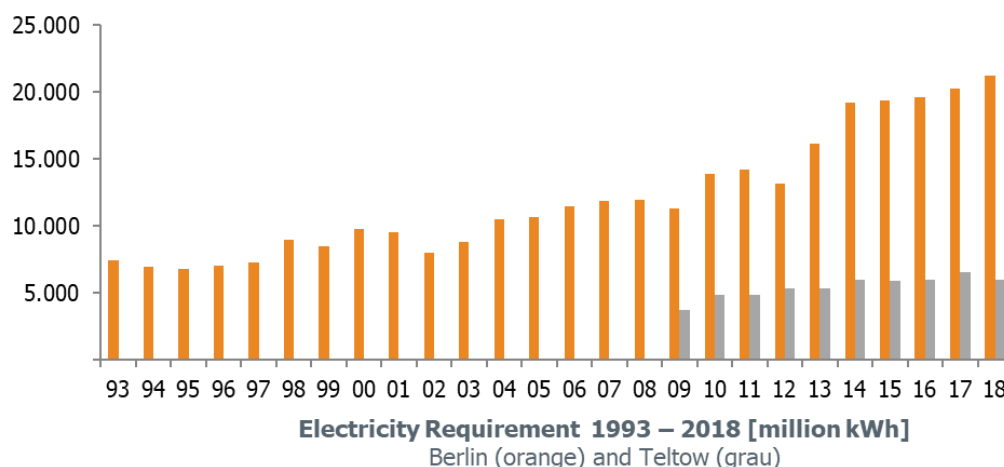
cooling the workpieces, as well as for pneumatic purposes, the cooling of baths, operating the stamping, injection molding and erosion machines, for the ventilation systems, lighting, and small consumers.

Power consumption

Electrical energy — Operational purposes

Electricity is used for plating processes, the supply of electrolysis cells, bath heating, hot-air drying, the bath suction systems, the generation of compressed air for blowing off and

In 2018, approx. 21.3 million kWh of electrical energy were required at the Berlin location; in Teltow the figure amounted to 6.0 million kWh.



IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Implemented measures

Over the past few years, some energy-saving measures have been implemented. For the compressors of the reel-to-reel plating facilities, a consumption-dependent control system was installed, enabling the power-on times of the units to be optimized. Energy-saving measures which have already been implemented (or which are planned) also relate to the use of LED lamps for illuminating workplaces. In addition, rectifiers on an electroplating plant were replaced, resulting in energy savings. The installation of fan motors with improved efficiency class has also contributed to savings.

Development of consumption volumes

In Berlin the power requirement has slightly increased over the past years., which were due to the start-up of new machines and the increase in production. The Teltow location recorded a decline as a result of the measures taken and production-related fluctuations.

At the locations, natural gas (Berlin) and district heat (Teltow) are used for building heating. In Berlin, process heat is also required for drying the workpieces and heating the electroplating baths. This process heat is generated using natural gas. Energy-saving measures in the last Environmental Program concerned the replacement of a boiler system and the installation of fume scrubbers and supply air systems with heat recovery in a production building.

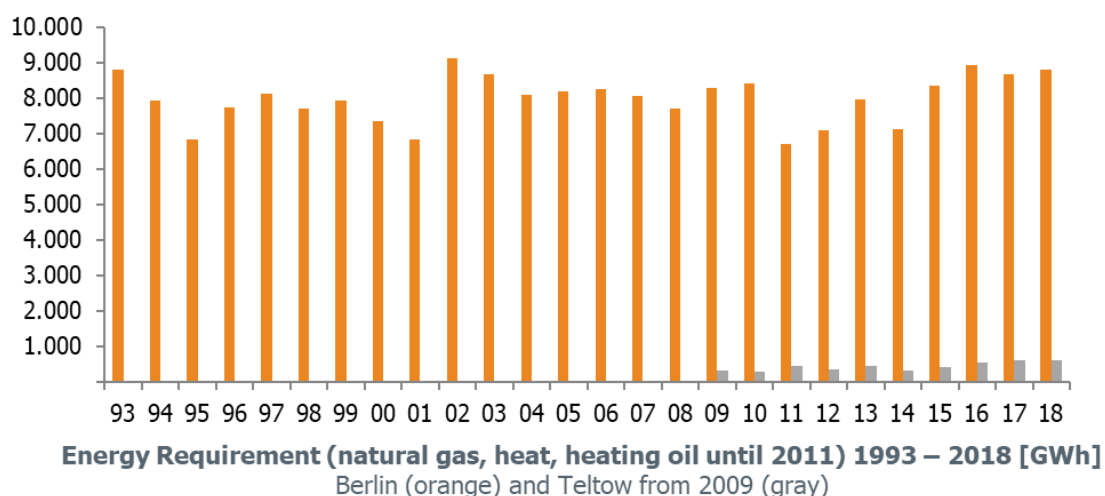
Total consumption and pattern

In 2018, the total energy requirement amounted to 9.42 GWh (8.81 GWh of gas in Berlin and 0.61 GWh of district heat in Teltow). The consumption pattern can be explained by different weather conditions and fluctuations in production.

Use of waste heat and heat recovery

Through the increased use of waste heat (compressors) and heat recovery (exhaust heat from the production halls), it is always possible to achieve savings. However, these are partly offset by opposing effects.

Gas and district heat — building heating and process heat



IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

WASTE

Types of waste

In the Output Table, four large waste groups are specified (household-type industrial waste, other waste for disposal, waste for recycling and metal scrap). Among these types of waste are also those which are classified as hazardous due to legal regulations.

The following table names the type and volume of this waste (marked with an asterisk in the table), separated according to the Berlin and Teltow locations, whereby one-time generation is sometimes meant. Importantly, it should be noted that the specifications of the General Sample Administrative Regulation of the Federal State Committee of Immission Protection (Länderausschuss für Immissionsschutz - LAI) for avoiding, recycling and eliminating waste are adhered to.

Waste Teltow

Waste(Teltow)	Waste Code	2018 [t]
Suction and filter materials *	150202	2.4
Emulsion*	120109	0.90
Grinding sludge *	120118	2.39
Used oil *	130205	0.44
Hazardous waste (total)		6.13
Splash waste	070213	64.0
Metal scrap (copper-bronze-brass)	120104	1,005
Wood	170201	63.6
Foils	150102	6.7
Plastic waste	120105	12.0
Mixed municipal waste	200301	18.75
Paper and cardboard	150101	36.6
Iron and steel waste	191001	8.0
Kitchen and canteen waste	020108	0.86
Cooking oils and greases	200125	0.86
* hazardous waste in the meaning of waste legislation provisions		

IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Waste Berlin

Waste (Berlin)	Waste Code	2018 [t]
Electroplating sludge*	110109	231.05
Other waste containing hazardous substances *	110198	134.57
Filter candles*	150110	15.08
Nickel hydroxide sludge *	110109	4.38
Tin sludge *	110109	3.99
Emulsion *	120109	8.3
Used chemicals *	160507	0.58
Suction and filter materials *	150202	1.2
Used oil *	130205 / 130208	2.52
Fluorescent lamps *	200121	0.1
Hazardous waste (total)		401.78
Mixed municipal waste (press)	200301	226.43
Metal scrap	160117 / 160118	134.33
Wood	170201	72.78
Household-type industrial waste	200301	19.99
Used grease (grease separator canteen)	020204	10.8
Plastic (construction waste)	170203	17.27
Electrical waste	160214	4.07
Paper and cardboard packaging	150101	31.08
* hazardous waste in the meaning of waste legislation provisions		

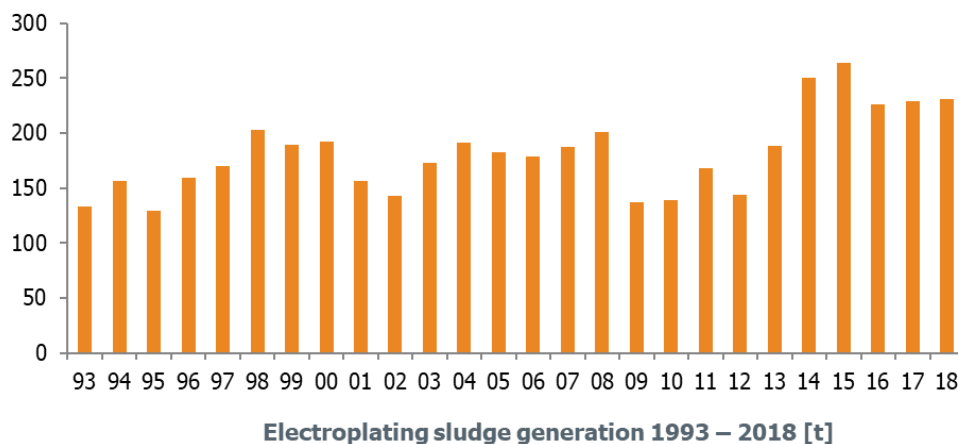
IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Electroplating sludge

The largest category of hazardous waste is the electroplating sludge in Berlin which is generated during waste water treatment. The volumes generated over the past few years are shown in the following diagram. The amount of sludge depends on the type and volume of waste water to be treated and thus on the processed orders. As the orders differ from year to year, the annual sludge volumes likewise fluctuate. Since March 2005, the sludge has no longer been disposed of by means of backfilling but is recycled. The precious metals contained in the electroplating sludge as well as zinc, copper and iron are drawn from the sludge and recycled.

Development of electroplating sludge generation

The Environmental Program 2010 contained measures for optimizing waste water treatment. These had an impact on the volume of electroplating sludge generated. The effect can be seen in the electroplating sludge generated in 2010: In spite of increased production, the volume almost remained the same in 2010. The fluctuations between 2011 and 2013 are due to different production volumes. The increase in 2014 was caused by the start-up of several reel-to-reel plating facilities. When comparing annual volumes, it should also be borne in mind that disposal shortly before or after the turn of the year can have a decisive effect on the volume allocated to the year, as a quantity of 20 t is disposed of per batch.

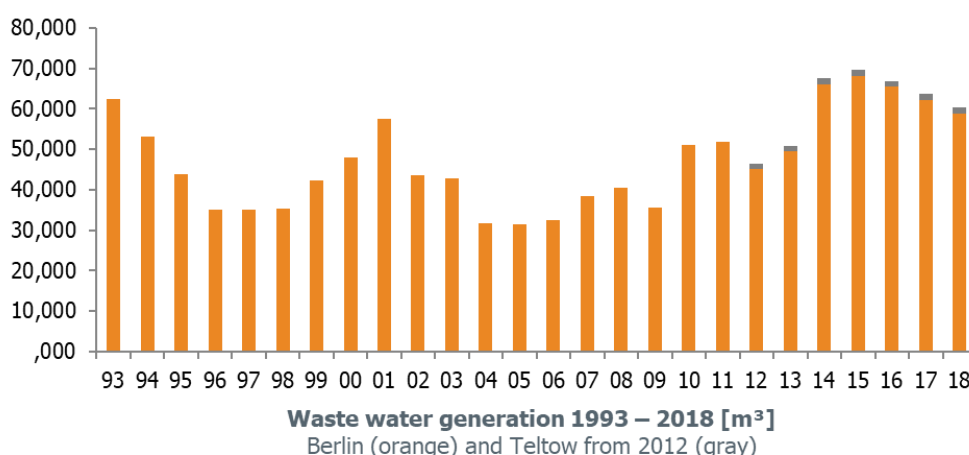


WASTE WATER

Volume

In 2018, approx. 58,902 m³ of waste water was generated at the Berlin location. This is a calculated value which was determined based on the quantities of water consumed and the

evaporation losses. Corresponding to fresh water consumption, 1,500 m³ of waste water was generated in Teltow.



IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Waste water treatment facilities

To treat waste water from Production, we have high-performance waste water treatment facilities in Berlin for treating waste water in a targeted and effective way. Approval for the discharge of substances into the public sewage system is a component of the legal immission protection permit.

Discharge values

In the permit, waste water discharge values are defined for the existing discharge points. The observance of these values is monitored at least once a month by accredited laboratories.

The results are transmitted to the licensing authority. The specifications that need to be observed for the individual substances are named in the following table. The table not only shows the limit values but also the average discharge values in 2017, which were generated from the monthly laboratory analyses. For the individual substances, the table also states the extent to which the assigned maximum discharge value is reached. Value 1 would mean that the permitted discharge value is actually reached, which is not the case in any instance.

Limit and Measurement Values

Material	Limit value [mg/l]	Dis-charge point 1 [mg/l] ¹	Extend to which the limit value is reached	Dis-charge point 2 [mg/l] ¹	Extend to which the limit value is reached	Dis-charge point 3 [mg/l] ¹	Extend to which the limit value is reached
Cyanide	0.2	0.01	0.07	0.18	0.91	0.05	0.23
Copper	0.5	0.04	0.09	0.02	0.03	0.05	0.11
Lead	0.5	0.01	0.02	0.01	0.02	0.01	0.02
Tin	2	0.49	0.25	0.03	0.01	0.45	0.23
Zinc	2	0.02	0.01	0.02	0.01	0.01	0.01
Nickel	0.5	0.12	0.25	0.08	0.15	0.01	0.01
Chrome	0.5	0.01	0.01	0.01	0.02	0.01	0.01
Chrome	0.1	0.02	0.23	0.02	0.23	0.02	0.20
Silver	0.1	0.01	0.15	0.01	0.13	0.02	0.16
AOX ²	*	0.05	*	0.70	*	0.87	*
Chlorine	0.5	0.18	0.35	0.18	0.35	0.18	0.35
Sulfide	1	0.04	0.04	0.09	0.09	0.09	0.09

¹Rounded values; extent to which the limit value is reached calculated with raw data

²AOX = absorbable organic halogen compounds. The discharge value for AOX has not been included due to the fulfilment of certain regulations.

IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

EMISSIONS

Sources and source groups

The emissions from the firing systems may be seen in the diagram with the heading “Input and Output – An Overview”. In 2017, due to a defective heat exchanger, a building was temporarily heated with heating oil for a limited period of time, resulting in increased emissions of dust, hydrocarbons and sulfur dioxide.

Emissions from the electroplating facilities

All active baths of the electroplating facilities are equipped with extractors. These prevent concentrations of hazardous substances becoming too high in the ambient air. There are separate systems for the various exhaust air flows, as these are not permitted to come together. Before the extracted air enters the atmosphere, droplets are eliminated, for instance, and hazardous substances and gases removed via fume scrubbers. To reduce emissions we use tensides. These are put into the baths and make it difficult for substances to enter the air via the baths. As soon as our electroplating facilities required a permit following a legal change in 2001, a number of one-time as well as recurring emission measurements were carried out on some facilities to detect the level of nickel, chromium, chlorine, fluoride, cyanides and nitrogen oxides.

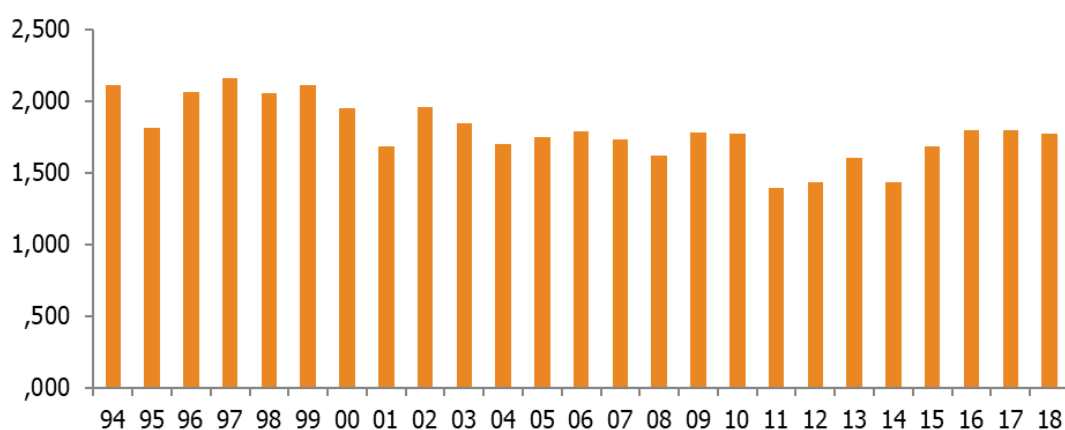
The result: All limit values assigned by the Technical Instructions on Air Quality Control (TA Luft) are being observed.

Fume Scrubber

The Environmental Programs of the past few years contained measures directed at reducing emissions. The exhaust air facilities of various electroplating machines were equipped with fume scrubbers. In total 27 such units are now in operation.

Heat generation

At the Berlin location, we have three hot-water boilers for generating process heat and five boilers for building heating. One of the building heating boilers was renewed as part of the Environmental Program 2017. Gas is used as the energy source for the machines. Compared to using heating oil as a fuel, gas leads to lower emissions of dust, soot and sulfur dioxide. A reduction in carbon dioxide emissions was also achieved. By way of exception — as already mentioned above — a building had to be temporarily heated with a heating oil system in 2017. The following diagram shows the CO₂ volumes emitted over the past few years at the Berlin location. Not shown are the CO₂ emissions resulting from power consumption in 2018. Based on the actual consumption and the electricity mix in 2018 (Source: Federal Environment Agency (UBA), 2019), this power consumption amounted to approx. 12,908 t (both locations). The use of district heat (provided by a gas boiler) at the Teltow location is associated with CO₂ emissions of approx. 136 t.



Carbon Dioxide Emissions at the Berlin Location 1994 – 2018 [t]

IMPORTANT ASPECTS OF OPERATIONAL ENVIRONMENTAL PROTECTION

Development of CO₂ emissions

Carbon dioxide emissions are largely influenced by the energy requirement for building heating and thus by weather conditions. The decrease in 2011 is also attributable to the decommissioning of the cogeneration plant (lower consumption for heating oil and thus lower location-related CO₂ emissions).

NOISE

Surrounding area

The Berlin site emits noise that can be perceived in the neighboring area. Operational activities have been and continue to be strongly focused on implementing measures at the site to avoid disturbance. Limit values are specified for the Berlin location by the legal immission permits.

During normal operation, there are no noise emissions at the Teltow site which could disturb those in the neighboring area.

Workplaces

At the Berlin location, noise emissions at the workplace are caused mainly by circulation noises when blowing out unwanted liquids from workpieces. In Teltow, the stamping machines and the vibrators on the injection molding machines are the main sources of noise. The goal is always to set up facilities that generate a minimum level of noise in order to keep noise pollution low.

CORE INDICATORS

Key performance indicators with the reference values of total gross value added and machine runtimes

Change in input/output (%) relating to the gross value added 2009

Since 2009, the EMAS Regulation has demanded the definition of key indicators which provide a gauge for measuring the environmental performance of the company. As a basis for this, the EMAS Regulation specifies either the overall output quantity or the operational gross value added. We opted for the gross value added as a basis. As the naming of the gross value added would enable the identification of confidential data, the gross value added from the year 2009 is set as the basis for all analysis periods.

For the subsequent years, information is provided on the extent to which the indicators deviate from the basis year (as a percentage). Besides the key performance indicators based on gross value added, we also form key performance indicators relating to the reference value of machine runtimes (sum of the operating times of all program-controlled electroplating machines, stamping machines, injection molding machines and erosion facilities) in order to derive additional insights from the development of the key performance indicators.

CORE INDICATORS

The improvement in the core indicators over recent years is based on a significant increase in gross value added in comparison with base year 2009.

Key Performance Indicators	2016	2017	2018	2016	2017	2018	Unit
	Basis: Gross Value Added 2009			Basis: Machine Runtime			
Total energy requirement (electricity + heat)	-42%	-47%	-48%	96	104	105	kWh/h
Water requirement	-36%	-44%	-48%	191	197	187	l/h
Requirement: Anode material**	-41%	-42%	-33%	688	713	862	g/h
Requirement: Metal salts**	-33%	-51%	-51%	387	302	317	g/h
Requirement: Concentrates, metal-bearing**	-24%	-44%	-64%	319	251	169	g/h
Requirement: Bath additives**	-38%	-31%	-23%	1,317	1,579	1,811	g/h
Requirement: Acids **	-23%	-25%	-17%	2,970	3,066	3,548	g/h
Requirement: Alkalis **	-36%	-64%	-29%	2,253	1,372	2,770	g/h
Requirement: Carbon dioxide **	-65%	-80%	-68%	294	177	301	g/h
Requirement: Waste water chemicals **	-34%	-59%	-46%	5,333	3,523	4,853	g/h
Requirement: Tin-bronze***	k.A.	k.A.	k.A.	9,358	7,550	8,185	g/h
Requirement: Plastic granulate ***	k.A.	k.A.	k.A.	3,336	3,172	3,145	g/h
Requirement: Stainless steel ***	k.A.	k.A.	k.A.	710	452	226	g/h
Hazardous waste recycling	-41%	-41%	-40%	1.0	1.1	1.2	kg/h
Hazardous waste disposal *	2,727%	566%	95%	36.4	10.2	3.1	g/h
Non-hazardous waste recycling	66%	-40%	49%	4.5	1.9	4.9	kg/h
Non-hazardous waste disposal	-39%	-85%	-60%	0.06	0.02	0.04	kg/h
CO ₂ (without mains power)	-61%	-65%	-66%	5.2	5.5	5.5	kg/h
Dust	-100%	-96%	-100%	0.01	0.11	0.01	g/h
SO ₂	-99%	-95%	-99%	0.05	0.20	0.05	g/h
NOX from NO ₂	-83%	-83%	-85%	4.7	5.6	4.9	g/h
CO	-71%	-74%	-76%	2.8	3.1	2.9	g/h
Space requirement	-41%	-48%	-49%	0.05	0.05	0.05	m ² /h

* The worsening of the situation in 2016, 2017 and 2018 is the result of one-time waste generation

** Key performance indicator based on machine runtime:
determined on the basis of the machine runtimes at the Berlin location

*** Key performance indicator based on machine runtime:
determined on the basis of the machine runtimes at the Teltow location

ANALYSES OF RESIDUAL POLLUTION / BOUNDARY CONDITIONS

ANALYSES OF RESIDUAL POLLUTION

Examination of the soil and groundwater

In 1990, the Berlin Institute for Building Material Testing (Berliner Institut für Baustoffprüfungen GmbH – BIB) carried out analyses of the sediment and the groundwater to check for contamination by inorganic and organic compounds that are hazardous to water. At one sampling point, contamination was determined. However, there were no indications of any large-scale spread of the substances. At the groundwater monitoring sites, volatile halogenated hydrocarbons were found in elevated concentration. As contamination levels, some of which are high, are measurable in the surrounding area, the report comes to the conclusion that, with respect to these

compounds, it can be assumed that a source of contamination is also present beyond the company premises.

The results of the analyses were assessed by the Senate Administration for Urban Development in Berlin (Berliner Senatsverwaltung für Stadtentwicklung). The assessment states that, on the basis of the information provided, no cleanup is required.

In 2009, analyses were carried out once again. Indications of soil or groundwater contamination were not found, so that on the basis of these more recent analyses there remains no need for action.

BOUNDARY CONDITIONS

The boundary conditions – not always optimal

Environmental laws and regulations are aimed at ensuring that environmental damage is avoided.

We fully support this goal. However, we would welcome it if the users at companies – in particular at the small and medium-sized ones – were also taken into account when developing regulations.

To prevent distortion of competition, the areas of validity of environmental regulations and competitive areas should be congruent as far as possible. If this is not the case, the different regulations even within Germany itself, and all the more in the countries of the European Union as well as in Eastern Europe, generate considerable competitive disadvantages.

ENVIRONMENTAL PROGRAMS

Improvement of operational environmental protection and safety

We regularly set up Environmental Programs which contain measures for improving operational environmental protection and safety.

In in the Environmental Programs, goals and the measures planned for achieving them are named.

ENVIRONMENTAL PROGRAM 2018 (EXCERPT)

Goals	Measures	Implementation by
Water protection	Procurement of emergency sets for oil binding agents for Halls 10, 11, 9 and 9A (Teltow)	03/18 implemented
Occupational safety	Procurement of chemical cabinets for the safe storage of substances hazardous to water in working areas	04/18 implemented
Waste prevention	Conversion of the paper press from 10 m ² to 20 m ² with lifting and tilting device	06/18 implemented
Environmental protection Water protection	Procurement of sewer barriers to secure the public rain-water and sewage network in the event of accidents involving chemicals	09/18 implemented
Noise protection	Noise barrier and new location for water chiller of annealing furnace	09/18 implemented
Waste prevention	Introduction of electronic incoming invoice processing	12/18 implemented
Occupational safety	Introduction of an e-learning portal for occupational safety instructions (quick access to occupational safety topics with knowledge check)	12/18 implemented
Energy savings	Use of LED workplace illumination instead of fluorescent tubes at the cost centers 931, 932 and 933 (electricity savings of approx. 66,000 kWh/a with 66 luminaires)	12/18 implemented
Energy savings	Replacement of conventional lighting by LED workplace illumination in offices in buildings 7 and 8 (electricity savings of approx. 10,700 kWh/a)	12/18 implemented
Energy savings	Conversion from conventional hall lighting to LED illumination in Halls 10 and 11 (Teltow) (electricity savings of approx. 130,000 kWh/a)	12/18 implemented
Energy savings	Conversion of two motors for centrifugal fans of the fume scrubber 7 on building 8 from IE 2 to IE 4 – (electricity savings of 68,152 kWh/a)	12/18 implemented
Energy savings	Replacement of rectifiers on electroplating units	ongoing
Health	Revision of the canteen concept and conversion to a more health-conscious diet	01/2019 implemented

The 2018 environmental program has been implemented almost as planned. The formulated goals were achieved.

ENVIRONMENTAL PROGRAMS

ENVIRONMENTAL PROGRAM 2019

The current environmental program contains the following objectives and measures (excerpt):

Goals	Measures	Implementation by
Energy savings Emission reduction	Construction of a new compressor centre in Berlin (reduction of energy requirement for compressed air generation from 4.3 GWh/a to 3.04 GWh/a; increase in heat recovery from 0.72 GWh/a to 1.68 GWh/a; reduction of CO ₂ emissions from 2,482 to 1,461 t/a)	05/19 implemented
Energy savings	Conversion of the corridor lighting to LED in the area of Kst 523 and Kst 522 in Berlin (energy saving with 41 luminaires from approx. 30,800 kWh/a)	03/19 implemented
Energy savings	Conversion of the lighting in the social areas in building 8 to LED (Berlin)	09/19 implemented
Energy savings	Conversion of the lighting in the chemical warehouse in building 7 to LED in Berlin (electricity saving of approx. 4,860 kWh/a)	10/19 implemented
Energy savings	Conversion to LED lighting in Halls 10, 10a and 11 in Teltow (savings 139,000 kWh/a)	03/19 implemented
Energy savings	Replacement of four compressors in the fields of stamping and packaging technology, new tool construction and plastics technology by more energy-efficient systems (Teltow)	06/19 implemented
Waste prevention	Conversion from plastic cups in beverage vending machines to recyclable paper cups	02/19 implemented
Waste prevention	No need for disposable cardboard cups for coffee in the canteen	04/19 implemented
Health protection	Health days organized by the health insurance (offer of back courses and progressive muscle relaxation)	06/19 implemented
Occupational safety	Installation of a central air extraction system for the soundproof booths in the automatic punching shop (Teltow, hall 10)	04/19 implemented

VALIDATION

Declaration of the Environmental Auditor on the auditing and validation activities

The undersigned EMAS Environmental Auditor Dipl.-Ing. (FH) Jürgen Schmallenbach (Registration No.: DE-V-0036), accredited or approved for the areas of 25.6 Surface Finishing and Heat Treatment, mechanics, Mechanics – not otherwise specified (NACE code for Berlin), as well as 25 Manufacture of Metal Products and 22 Manufacture of Rubber and Plastic Goods (NACE Codes for Teltow), confirms that he has examined whether the location or the entire organization, as specified in the Environmental Declaration of Diehl Metal Applications GmbH (registration number D-107-00010), has fulfilled all requirements of the Regulation (EC) No. 1221/2009 of the European Parliament and Council from Nov. 25, 2009 and the Regulation (EC) 2017/1505 of the Commission from August 28, 2017 via the voluntary participation of organizations in the Eco-Management and Audit Scheme, (EMAS).

By signing this declaration, it is hereby confirmed that:

- the audit and validation has been carried out in complete agreement with the requirements of the Regulation (EC) No. 1221/2009 and the Regulation (EC) 2017/1505,
- the result of the audit and validation verifies that there is no evidence of non-observance of the pertinent environmental regulations,
- the data and information contained in the Environmental Declaration of Diehl Metal Applications GmbH at the Berlin and Teltow locations provide a reliable, credible and truthful picture of all activities of Diehl Metal Applications GmbH at the Berlin and Teltow locations within the area specified in the Environmental Declaration.

This Declaration cannot be equated with an EMAS registration. The EMAS registration can only be carried out by a competent authority in accordance with Regulation (EC) No. 1221/2009. This Declaration may not be used on a stand-alone basis for public information.

Each year, updated Environmental Declarations will be published. The next Environmental Declaration will be published in November 2020.

Berlin and Teltow, November 07, 2019



Dipl.-Ing. (FH) J. Schmallenbach
Environmental Auditor DE-V-0036

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88437 Maselheim

ENVIRONMENTAL DECLARATION 2020



Next Environmental Declaration

Due to our participation in the EMAS system of the European Union, we will compile Environmental Declarations over the coming years, too. The next Environmental Declaration will be published in October 2020.

Dipl.-Ing. Kristine Odefey
Environmental Management Officer

Any Questions?

Should you have any questions or suggestions relating to our Environmental Declaration or on Diehl Metal Applications – please feel free to contact us.

Your Contact Person

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