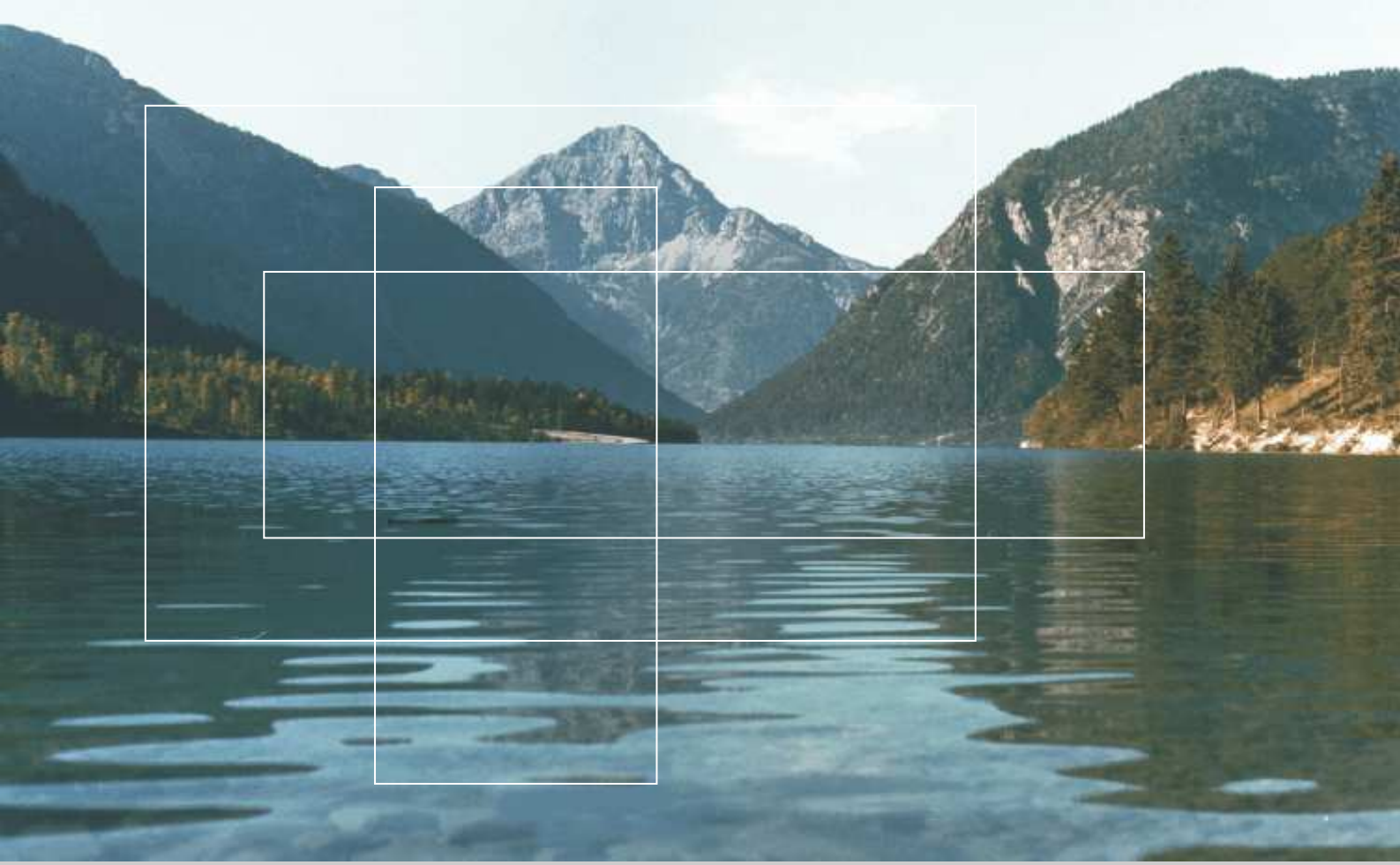


Environmental Report 2010

Site Breitenwang / Reutte

plansee GROUP

1. Introduction

The companies of the Plansee group at the site Breitenwang/Reutte (hereinafter called Plansee) are situated in an intact Alpine scenery, that also is partially used for agriculture as well as for tourism. Environmentally friendly manufacturing processes are a matter of particular concern for us and are laid down in the corporate values of the PLANSEE HPM group and the CERATIZIT group:

Our living space
- Taking care of our living space comes naturally to us.

Our environment counts
- Environmental protection is a matter of each employee – at home and at work.
- As company we guarantee to be a „considerate neighbour".

We take on our responsibility by
- having installed an **Environment Management System** according to ISO 14001
- evaluating regularly our **environmental impact**
- setting **environmental targets** annually
- planning and implementing **environmental programmes** in order to achieve these targets

With this environmental report we document the results of these efforts.

2. General information on the site Breitenwang/Reutte

Following companies of the Plansee-group are residing at the site Breitenwang/Reutte:

PLANSEE SE
- Holding company of the division „High Performance Materials"
- Comprises all central service units: Innovation Services, Human Resources, Strategic Purchasing, IT, Central Technical Services, Marketing International, Controlling, Finances and Accounting, QSE-Management, Legal Services
- Employees: apx. 400

PLANSEE Metall GmbH
- Biggest subsidiary of PLANSEE SE
- Comprises development, production and sales of products made of refractory metals
- Employees: apx. 900

CERATIZIT Austria Gesellschaft m. b. H.
- Subsidiary of CERATIZIT S.A. at Mamer, Luxembourg
- Comprises development, production and sales of hard metals
- Employees: apx. 600

PMG Asturias S.A. branch Austria
- Subsidiary of PMG Asturias Powder Metal S.A.U. in Spain
- Comprises production of specific sinter steel parts fort he automotive industry
- Employees: apx. 20

3. Environmental Management

Plansee installed and continuously maintains a Quality-Safety-Environment-Management-System.

The Environmental-Management-System complies with the requirements of the prevailing **environmental regulations** and the environmental management standard **ISO 14001**.

The **Environmental Management System** is **ISO 14001 certified**
(Registration-No: 01031/1 and 01033/0).

4. Production processes

4.1. PLANSEE Metall GmbH

Raw materials	Metal oxides (e.g. MoO_3), alloy additions
Reduction	Metal oxides are reduced with hydrogen to metal powders. These are mixed with alloy additions to ready to press powders
Pressing	Metallic powders are compacted to parts with chalk-like consistency by mechanical pressing
Sintering	Pressed parts are sintered to compact metallic parts at temperatures slightly below the melting point
Thermo mechanical forming	Sintered parts are formed to semi-finished parts (sheets, ribbons, rods, wires) by forging, rolling, extruding with appropriate pre- and intermediate annealing
Mechanical processing	Semi-finished parts are processed to complex finished parts by turning, milling, grinding, etc.
Chemical surface treatment	Semi-finished and finished parts are chemically cleaned and electrochemically machined respectively
Products	Semi-finished and finished parts made of refractory metals

4.2. CERATIZIT Austria Gesellschaft m. b. H.

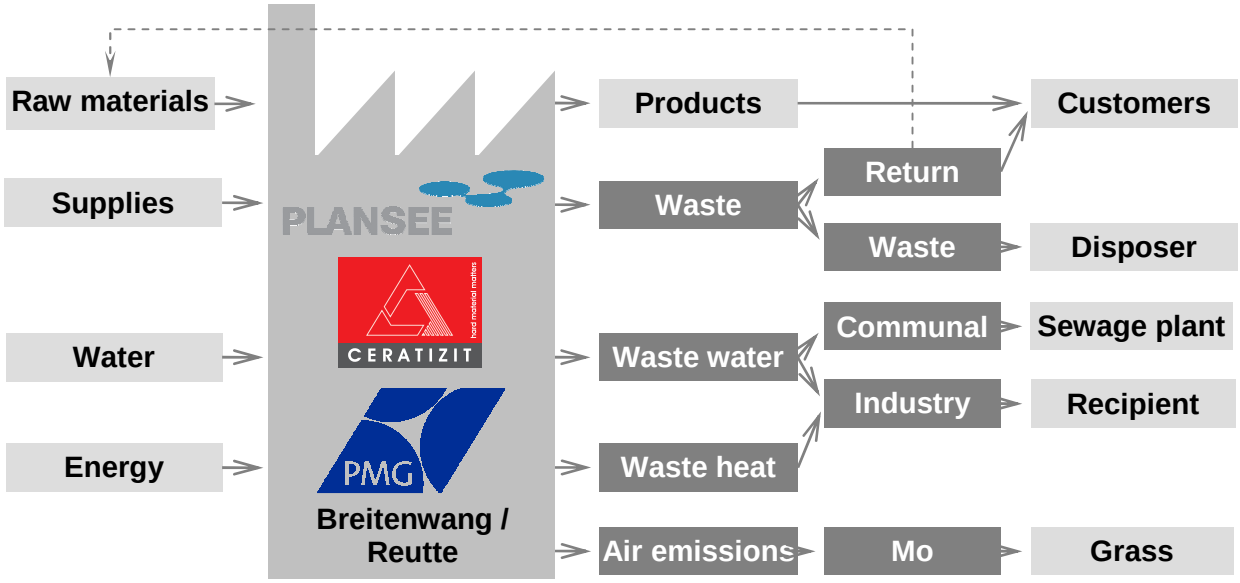
Raw materials	Tungsten carbide, binder metals (e.g. cobalt), alloy additions, wax
Powder preparation	Tungsten carbide is mixed with binder metals, alloy additions and wax and converted by spray-drying into ready to press hard metal granulate
Pressing	Hard metal granulate is compacted into parts with chalk-like consistency by mechanical pressing
Forming	When required, near-net-shaped blanks are formed out of pressed parts by mechanical processing
Sintering	Pressed and formed parts respectively are sintered to dense hard metal parts at temperatures slightly beyond the melting point of the binder metals
Mechanical Processing	Sintered blanks are formed to the specific final geometry by grinding
Coating	When required, finished hard metal products can be provided with wear resistant coatings
Products	Hard metal products for wear- and cutting applications

4.3. PMG Asturias S.A. branch Austria

Raw materials	Steel powder
Pressing	Steel powder is compacted into final geometry
Sintering	Pressed parts are sintered to compact metallic steel parts at temperatures slightly below the melting point
Products	Sintered steel products for the automotive industry

5. Environmental impact of our activities

5.1. Overview



We put raw materials, supplies, water and energy into our processes in order to produce high-quality powder metallurgical **products**. In addition to the products **waste material, waste water, air emissions** and **waste heat** accrue.

The impact of these „products“ on the environment is described in the following subchapters:

- **material consumption**
- **energy consumption**
- **water consumption**
- **greenhouse gas emissions**
- **emissions of NOx**
- **emissions of molybdenum**
- **waste water**
- **waste material**
- **environmental incidents**

The individual subchapters are organized as follows:

- Short description of the environmental figure
- Objective
- Graphical presentation of the particular parameter’s developing during the last 4 years (fiscal years, beginning: March 1st) and comment of the developing
- Summary of the implemented and planned improvement measures
- Status: ■ no need for action
  ■ need for action, under control
  ■ need for action, not under control

The environmental indicators are determined based on the Global Reporting Initiative – Sustainability Reporting Guidelines, Version 3.0.

5.2. Material consumption

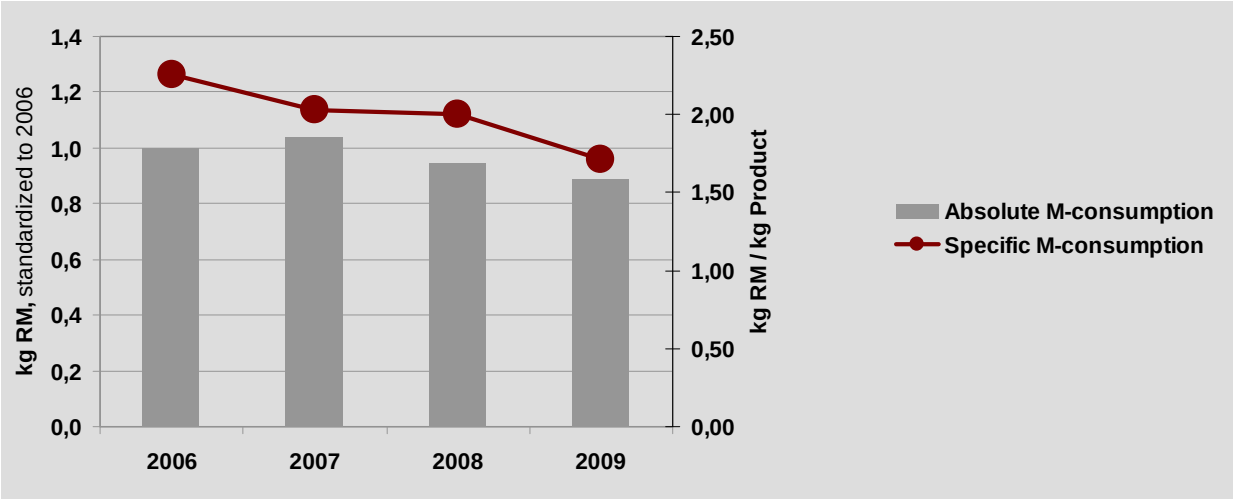
At the site Breitenwang/Reutte different raw materials (metal oxides, metal carbides, metals) are processed powder metallurgically. The main raw materials are molybdenum oxide and tungsten carbide.

The consumption of these materials is indicated as:

- **Absolute material consumption:** kg of used raw materials, standardized to the year 2006.
- **Specific material consumption:** ratio of the used raw material quantity to the quantity of finished products.

Objective:
Maintain the specific material consumption to the level of 2009.

Fig. 5.2.: Material consumption 2006 - 2009



The absolute material consumption decreased from 2006 to 2009 by 11 %, the specific material consumption by 24 %. The decrease of the absolute material consumption was partly caused by the economic crisis in 2009.

Improvement measures:

- Process optimizing projects “Operational Excellence“: ongoing
- Hard metal recycling (see 5.9.): since 2007

Status: ■ no need for action

5.3. Energy consumption

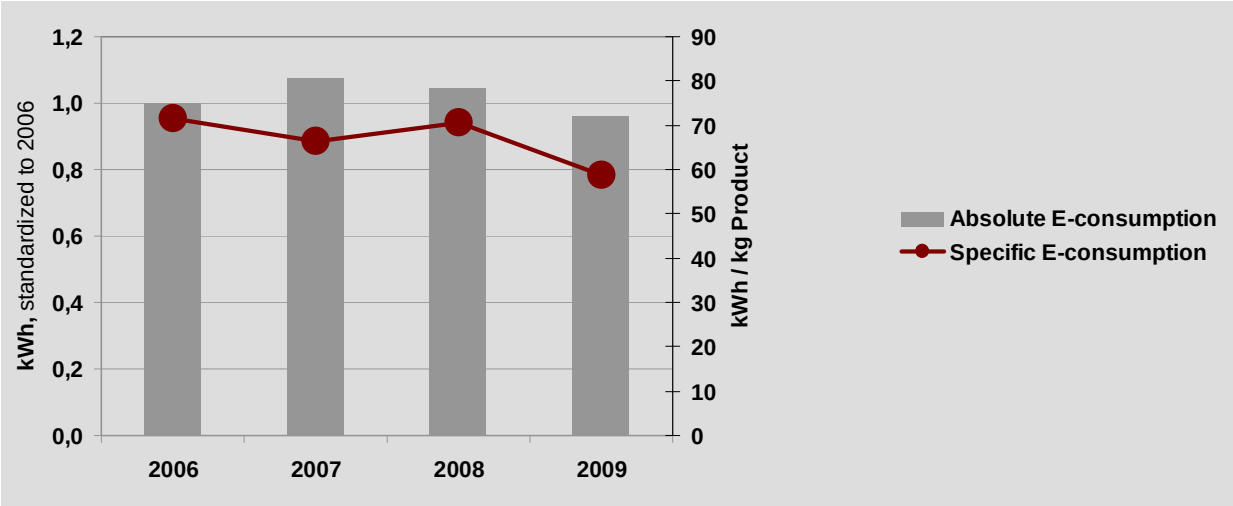
Due to the specific properties of our materials (high melting point) many of our production processes are particularly energy-intensive (see chapter 4).

We use as primary energy forms:
- Electric current
- Natural gas

Energy consumption is indicated as:
- **Absolute energy consumption:** kWh of the used primary energy, standardized to the year 2006.
- **Specific energy consumption:** kWh used energy per kg finished product.

Objective:
Maintain the specific energy consumption to the level of 2009.

Fig. 5.3.: Energy consumption 2006 - 2009



The absolute energy consumption decreased by 4 % in the period 2006 – 2009, whereas the specific energy consumption dropped by 17 % in the same period.

Improvement measures:
- Programme “Energy Efficiency and Energy Management at the site Reutte”: 2009 – 2011
  A subproject of this programme was awarded in 2009 in the scope of **klima:**aktiv, the climate protection initiative of the Austrian Federal Ministry of the Environment (page 8).

Status: ■ no need for action

5.3.1. Energy efficiency project awarded

Plansee Metall GmbH participated 2009 in the climate protection initiative of the Austrian Federal Ministry of the Environment **klima:**aktiv with the following energy saving project:

Reduction of electricity and hydrogen when sintering powder pressed parts made of molybdenum and tungsten

Initial situation:
In order to sinter refractory metals, temperatures of up to 2 500 ℃ are required. These can only be attained with electrical heating. The sintering takes place under current hydrogen which is burned afterwards.

Objective:
Construction of an energy-efficient prototype-sintering equipment

Measures:
- Adaptation of the properties of the molybdenum and tungsten powders in order to reduce the sintering temperature
- Change of the design of the electrodes to minimize the heat dissipation into the cooling water
- Changes in the cooling water circuit in order to use the stored energy in the hot water circuit
- Refeed of the hydrogen, used during sintering and re-use of it

Result:
Prototype-sintering equipment with an energy saving of 35 % compared to a standard-sintering equipment constructed in the same way.

On November 30, 2009 the project was awarded as Best-Practice-Example by the Austrian Federal Environment Minister.

klima:aktiv

http://www.klimaaktiv.at

5.4. Water consumption

The high-temperature processes of our production require efficient cooling. We mainly consume water in the form of cooling water which we extract from the ground water by means of company-owned wells.

Aside from the cooling comparatively minor quantities of water are used in the production as process water (e.g. for rinsing purposes).

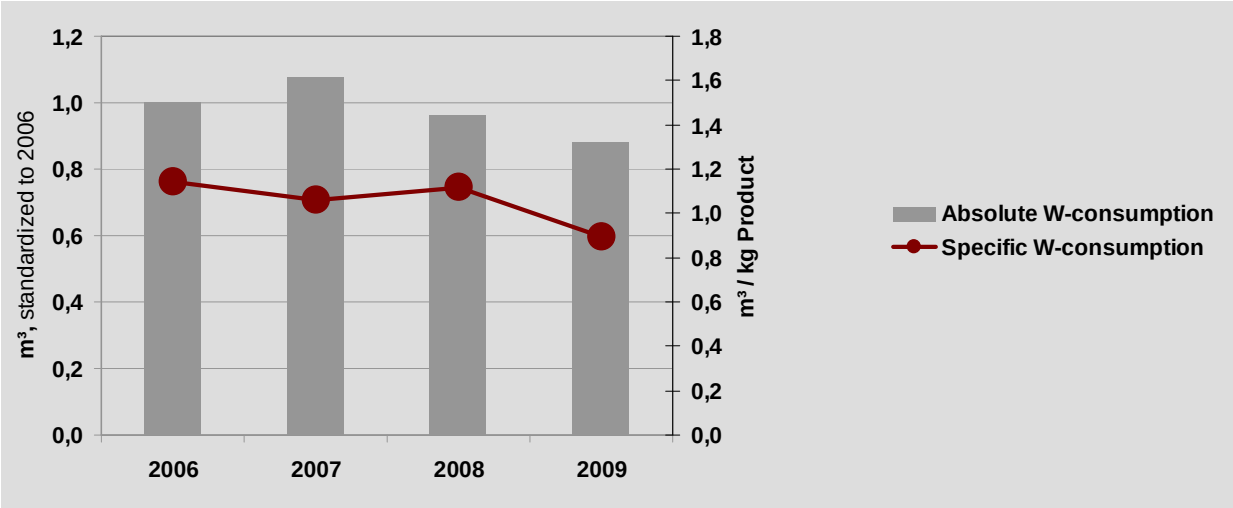
The water required for domestic purposes (toilets, kitchen) is taken from the communal drinking water net.

The water consumption is indicated as:

- **Absolute water consumption:** m³ of used process water, standardized to the year 2006.
- **Specific water consumption:** m³ of used water per kg finished product

Objective:
Maintain the specific water consumption to the level of 2009.

Fig. 5.4.: Water consumption 2006 - 2009



The absolute water consumption dropped by 12 % in the period from 2006 to 2009, whereas the specific water consumption dropped by 21 %.

Improvement measures:

- Closed-circuit cooling plants for high-temperature furnaces at all new projects.

Status: ■ no need for action

5.5. Greenhouse gas emissions

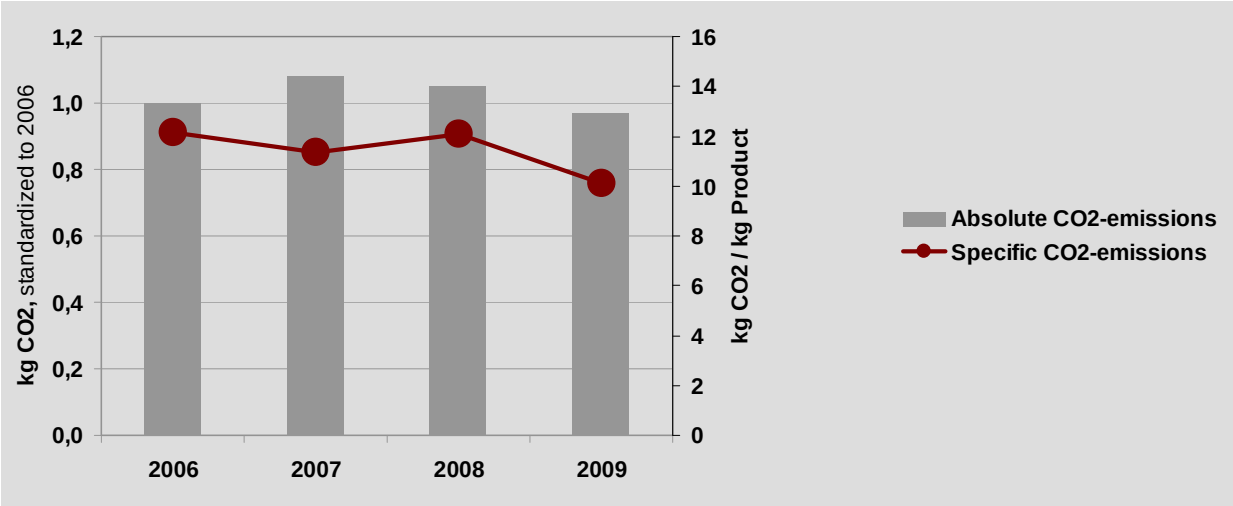
During the combustion of fossil fuels CO_2 is released as greenhouse gas. Natural gas is used as fuel for high temperature processes and for space heating. Up to 2006 oil as well as natural gas was used for heating purposes. The electric current used is to an extent of approx. 80% produced by means of fossil fuels. Thus this also results to CO_2 emissions.

The greenhouse gas emissions are indicated as:

- **Absolute CO_2-emissions:** kg of emitted CO_2, standardized to the year 2006.
- **Specific CO_2-emissions:** kg of emitted CO_2 per kg finished product.

Objective:
Maintain the specific CO_2-emissions to the level of 2009.

Fig.: CO_2-emissions 2006 - 2009



The absolute CO_2-emissions decreased by 3 % in the period from 2006 to 2009, whereas the specific CO_2-emissions dropped by 17 %.

Improvement measures:

- Improvement by energy efficiency programme (chapter 5.3.).

Status: ■ no need for action

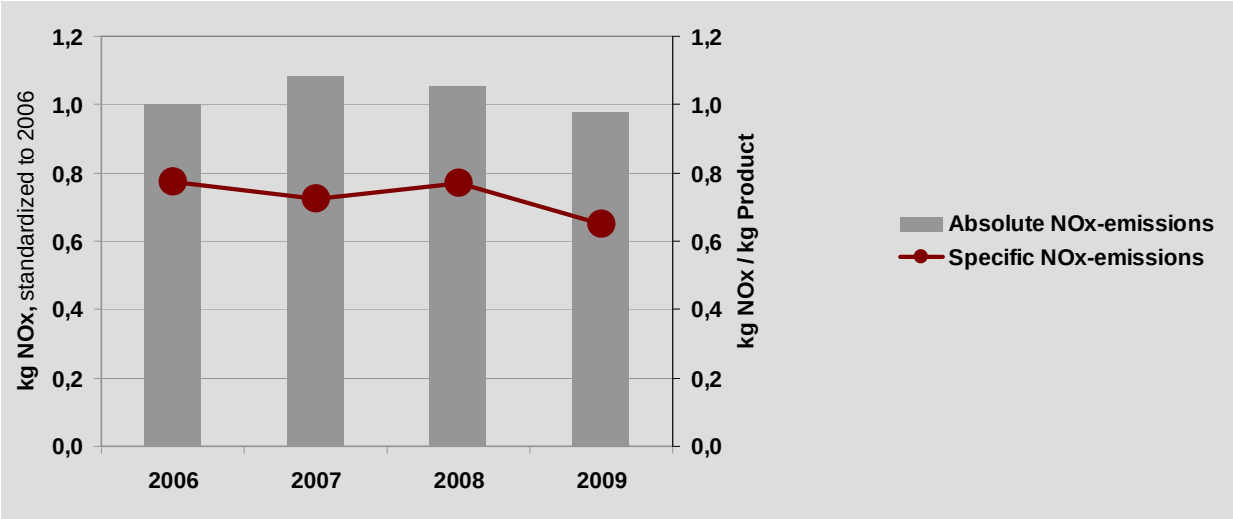
5.6. Emissions of NOx

NOx emits during the combustion of natural gas. As the electric current is partly produced from fossil fuels, it also contributes to the NOx-emissions.

The emissions of NOx are indicated as:
- **Absolute NOx-emissions:** kg of emitted NOx, standardized to the year 2006.
- **Specific NOx-emissions:** kg of emitted NOx per kg finished product.

Objective:
Maintain the specific NOx-emissions to the level of 2009.

Fig. 5.6.: NOx-emissions 2006 - 2009



The absolute NOx-emissions decreased by 2 % in the period 2006 – 2009, whereas the specific NOx-emissions dropped by 16 %.

Improvement measures:
- Improvement by energy efficiency programme (chapter 5.3.).

Status: ■ no need for action

5.7. Emissions of Molybdenum

During the powder metallurgical production and the thermo-mechanically processing of Molybdenum (Mo), dust consisting of Mo and Mo-oxide evolves. If this dust has gotten into the ambient air, it is deposited on the soil and absorbed by plants as soluble Molybdate. Via the plants Mo gets into the metabolism of animals.

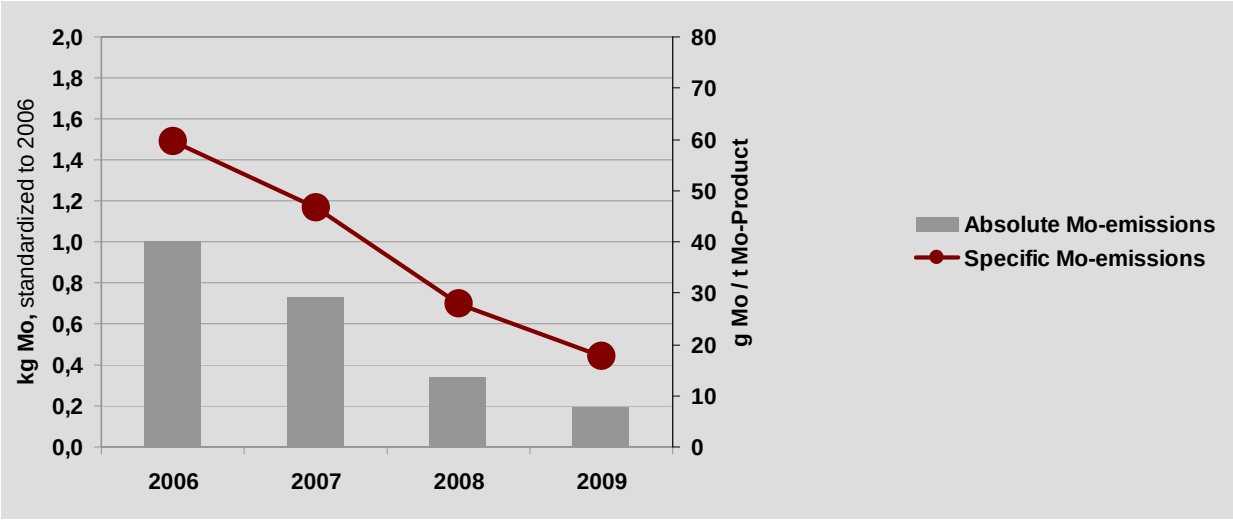
Problems:
Mo causes a disease known as “molybdenosis” with ruminants (cows and sheep). Molybdenosis is a Mo-induced copper deficiency. At the special conditions in the ruminant metabolism a very stable molybdenum-sulfur-copper complex is formed and the essential element copper is removed from the metabolism. Beyond that no toxic effects are known for Mo. On the contrary, Mo is necessary as essential trace element for plants, animals and human beings. Besides the problem of molybdenosis, high Mo concentrations in animal feed result in excessive Mo values in milk.

The Mo-emissions are calculated from dust precipitation monitoring (Bergerhoff method according to VDI 2119) at 6 permanent monitoring points. They are indicated as:

- **Absolute Mo-emissions:** kg of emitted Mo, standardized to the year 2006.
- **Specific Mo-emissions:** g of emitted Mo per t finished Mo product.

Objective:
Maintain the specific Mo-emissions to the level of 2009.

Fig. 5.7.: Mo-emissions 2006 - 2009



The absolute Mo-emissions dropped by 81 %, the specific Mo-emissions by 69 % in the period from 2006 to 2009.

Improvement measures:

- Programme: “Common future for agriculture and Mo-production“: since 1995

Status: ■ no need for action

5.7.1. Programme: “Common future for agriculture and Mo-production”

Because of the contamination of the agricultural land near the factory site, cows and sheep time and again fell ill (molybdenosis) and the intervention limits for Mo in milk (0.4 mg/kg) were exceeded in the past.

With the long-term programme “Common future for agriculture and Mo-production” we try to secure the interests of the local farmers as well as the interests of Plansee.

Objectives of the programme:

- Prevent animal diseases
- Prevent exceeding of the intervention limits for Mo in the milk
- Information of the farmers concerned and the policy makers

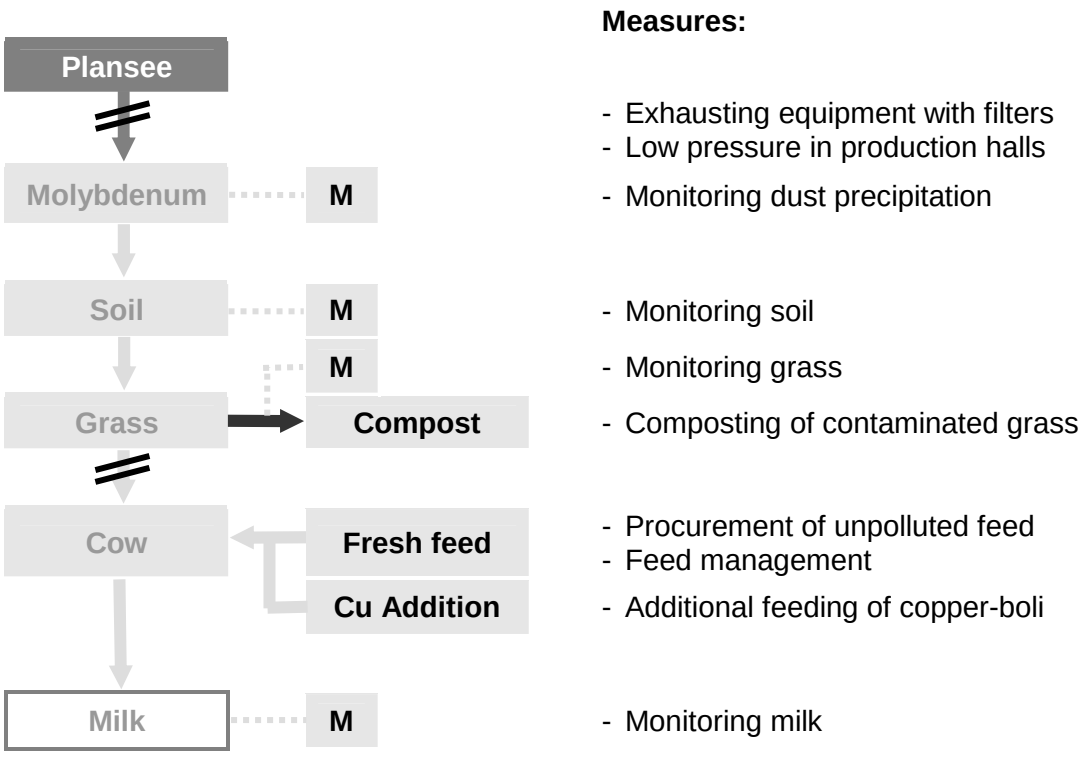


Fig. 5.7.1.

The co-operation of Plansee (monitoring, substitution of feed) with the farmers concerned (feed management) enables the further farming without serious problems

5.8. Waste water

Waste water appears in 3 different fractions:

- **Communal waste water** from toilets and kitchen does not contain any industrial impurities. It is discharged into the communal sewage plant by a separate channel.
- **Cooling water** (main volume) with slightly increased temperature but without any impurities is discharged into the recipient through the industrial waste water channel.
- **Process water** contains small amounts of metals (Mo, W, Co), inorganic chemicals (acids and bases, e.g. used for surface treatment), and a variety of impurities. It is treated in decentralized waste water treatment plants, which are located directly after the production equipment. After examination whether the specified emission limit values are kept, the treated waste water is let into the recipient through the industrial waste water channel.

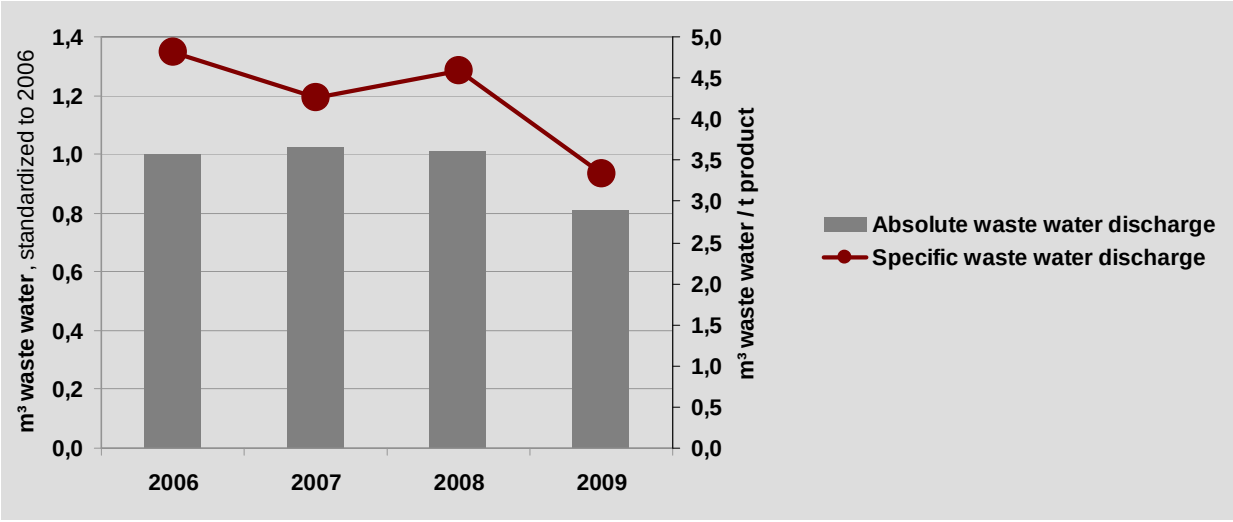
A waste water monitoring station is located immediately before the discharge in the recipient. This monitoring station continually measures and records the pH-value and the temperature. At this station reference samples are automatically half-hourly taken in order to enable later detailed analysis in case of an incident.

The amount of waste water (process water only) is indicated a:

- **Absolute waste water discharge:** m³ process water, standardized to the year 2006.
- **Specific waste water discharge:** m³ process water per kg finished product.

Objective:
Maintain the specific waste water discharge to the level of 2009.

Fig. 5.8.: Waste water discharge 2006 - 2009



The absolute waste water discharge decreased by 19 % and the specific waste water discharge by 31 % in the period 2006 – 2009.

Improvement measures:

- Installation of decentralised waste water treatment plants: ongoing projects

Status: ■ no need for action

5.9. Waste material

Following waste types arise with our production processes:

- Metal returns
- Recyclable waste (paper, glass)
- Hazardous waste
- Other non-hazardous waste

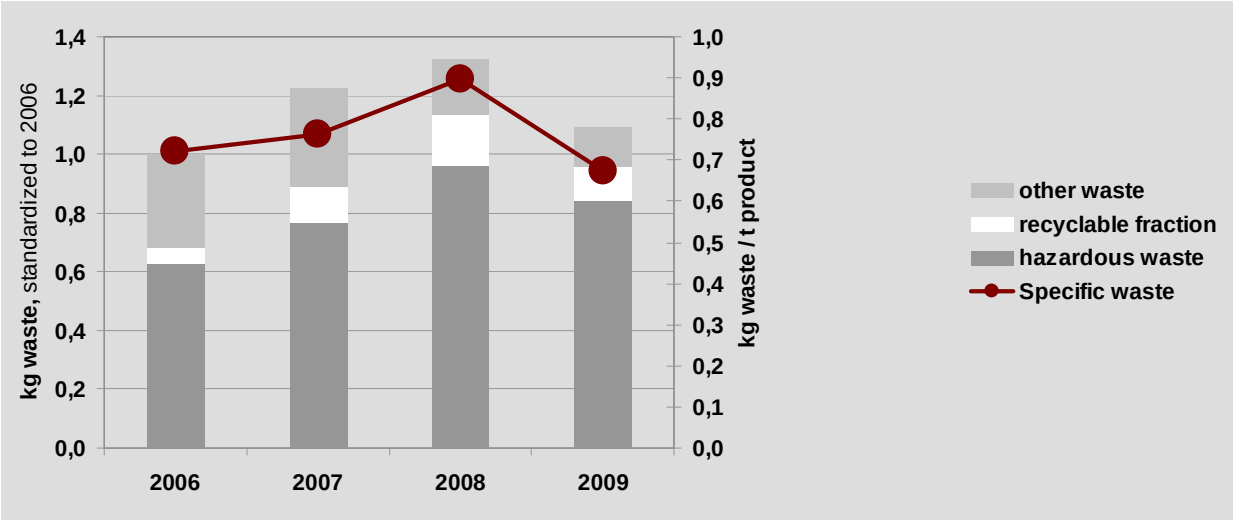
Metal returns are sold as by-products.
The hard metal scrap is processed in a hard **metal recycling plant** in a way that it can be reused in the production (for further details see 5.9.1).
The remaining waste is collected and separated due to its composition and disposed by **licensed waste disposal companies** according to regulatory requirements.

Waste (without metal returns) is indicated as:

- **Absolute waste:** kg of waste, standardized to the year 2006.
- **Specific waste:** kg of waste per metric tonne finished product.

Objective:
Reduction of the specific waste by 30 % compared to 2008.

Fig. 5.9.: Amount of waste 2006 - 2009



The absolute and specific waste increased until 2008. This increase was caused by complete collection and registration of all wastes. The portion of hazardous waste and of the recyclable fraction increased because of strict waste separation, whereas the amount of other wastes decreased. From 2008 to 2009 the absolute waste dropped by 17 % and the specific waste by 26 %.

Improvement measures

- Programme “Waste reduction”: 2009 - 2011
- Hard metal recycling: since 2007

Status: ■ no need for action

5.9.1. Hard metal recycling

Depending on the type of scrap two different process routes are applied:

Hard scrap recycling:
Hard scrap (sintered metallic compact hard metal) is reworked to a hard metal granulate which can be reused in the production process.

Soft scrap recycling (since 2009 carried out at GTP in the USA):
The cobalt binder metal is removed by a chemical process from the soft scrap (hard metals in powder form or with chalk-like consistency). The remaining tungsten carbide and the binder metal can be reused in the production process.

5.10. Environmental incidents

Environmental incidents are incidents which may result in adverse effects to the environment.

Environmental incidents are collected and recorded in the department Quality-Safety-Environment Management, independent of how serious they are. To facilitate the registration of incidents a registration portal in the intranet was established.

When environmental incidents occur a root cause analysis is performed and corrective and preventive actions are taken.

Objective:
Maximum registration rate (not quantified). A target value for the number of environmental incidents was knowingly not fixed to prevent that bagatelle incidents are not reported.

Improvement measures:
- Ongoing animation to report environmental incidents.

Status: ■ no need for action

5.11. Summary of the environmental impacts

Environmental impact	Status	
- Material consumption	■	
- Energy consumption	■	
- Water consumption	■	
- Greenhouse gas emissions	■	
- Emissions of NOx	■	
- Emissions of molybdenum	■	Main environmental impact of Plansee, controlled by a special programme
- Industrial waste water emissions	■	
- Waste material	■	
- Environmental incidents	■	

PLANSEE
High Performance Materials

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