MICRONAS

Freiburg Location

“Preserving what we value”

Micronas

Environmental *Statement* 2010

to EMAS/ISO 14001

"Committed to the environment – even in difficult times"

Foreword by Corporate Management

Following extensive restructuring of our company in 2009 and its alignment to the Automotive and Industrial businesses, we benefitted in 2010 from the recovery of the global automotive markets and from the positive underlying mood of the industrial market, for which we were able to supply a broad portfolio of suitable products.

As a result of this realignment, Micronas is now right back on track.

I am delighted to report that the measures we introduced have already had a positive effect on our business and that Micronas is again returning a profit for the first time for four years.

In May 2010, Micronas delivered the 500 millionth linear Hall sensor from the HAL 8xy family. We are convinced that further Micronas products will follow this success. We have every trust in our innovative technologies and we are committed to ecological development. Environmental awareness is not a short-term trend: the urgent need to conserve our environment has since been integrated into our corporate guidelines as a key priority. The ongoing improvement of our Management System responsible for Environmental Protection, Industrial Safety and Fire Protection is a matter of ever-increasing importance for us.

We are working constantly on implementing our environmental projects and we document our environmental achievements every year in the form of our Environmental *News*. For 2010 our report is now once again in the form of this detailed Environmental Statement.

The semiconductor industry – and Micronas, too – has been making considerable efforts over a period of many years to proactively reduce emissions of certain gases with high greenhouse potential. The basis for this self-commitment is the Memorandum of Agreement of February 2, 2001 signed by the member companies of the European Semiconductor Industry Association. This voluntary commitment involves lowering absolute emissions of the registered gases by ten percent by 2010. Furthermore, Micronas and all other semiconductor manufacturers with production facilities in Germany committed themselves to reducing total absolute emissions in CO_2 equivalents by at least eight percent by 2010 compared with 1995. With global semiconductor production growing by around 15 % a year, this represents a reduction by the semiconductor industry of the specific emissions of these gases of more than ninety percent compared with 1995. In 2010, Micronas not only met both these emission targets, it achieved significantly better figures than originally targeted.

In order to comply with our operating obligations, we are subject not only to commitments we have made within the industry but also to the requirements of our insurer. We are delighted that ACE Risk Management Services awarded us the AAA Certificate again in 2010, documenting the fact we consistently attain an outstanding standard of risk management.

In terms of our products, environmental protection plays a dual role. On the one hand, a great deal of energy and considerable volumes of water, chemicals and other materials are needed to manufacture our products. On the other, our products are used in the automotive industry for systems that reduce fuel consumption and enhance vehicle safety. You can read more about this under the title „Environmental Impact of Micronas Products" on page 10.

Improving key environmental data on a sustainable basis requires considerable patience, yet tackling environmental projects invariably proves to be worthwhile – for Micronas, for the environment and for our customers. To ensure we are well prepared for the challenges of the future, we will continue to pursue our major long-term commitment – guided by our maxim: "Preserving what we value".

Matthias Bopp

Chief Executive Officer

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CORPORATE PRINCIPLES

Micronas is a leading supplier of cutting-edge sensor and IC system solutions for automotive and industrial electronics. In order to meet the very high demands of these industries, we are committed to the following principles:

Customer satisfaction

We want to be among the best. The success and the satisfaction of our customers are our benchmarks. We want to offer them faultless products at good value for money and with optimum service. Our customers' assessment of the quality and benefits of our products and the service we deliver is an indication to us of how well we are meeting their demands and expectations and how we can further improve.

Products

We set high standards. Our business success is dependent on the quality of our products and services. We work in close cooperation with our customers to develop and manufacture products tailored to their specific needs and give them a technological lead.

Employees

We are Micronas. Through open communication between management and employees, we have created a working climate marked by trust, stability, creativity and spontaneity. Regular training enhances the motivation of our employees and enables them to meet the constantly changing challenges. Every member of the workforce, irrespective of his or her position, is accountable for the quality of his or her individual performance. The managerial staff have a role-model function and, through dialogue and information, ensure that quality is a basic principle embraced by everyone on a day-to-day basis. Quality is a corporate obligation and thus an ongoing duty for all departments, hierarchical levels and employees.

Processes

We are focused on cooperation. Customers are recipients of process outputs. We regard our company as a network of service relationships in which every employee is both a customer and a supplier of work results. Through the consistent implementation of this concept, we consolidate customer/supplier relations and thus form the basis for the satisfaction of our external customers. For all processes, performance criteria must be defined to enable the process results to be assessed at each stage of the process. This key performance indicator system provides us with the basis for our continuous improvement process.

Results

We think and act with a business-focused approach. All corporate activities are aimed at safeguarding our financial results and consistently improving them. The effectiveness of these activities is verified through the constant monitoring of key parameters.

Social responsibility

We assume responsibility. Our activities, which are geared to economic success, must also comply with social, ethical and ecological standards. We aim to avoid safety risks and prevent any impact on the environment from the very beginning rather than try to limit the effects or eliminate the damage afterwards. All measures are aligned not only to short-term targets but also to long-term process improvements and changes of behavior. This necessitates not only the optimum handling of resources, but also an accurate forward-looking evaluation of potential environmental influences.

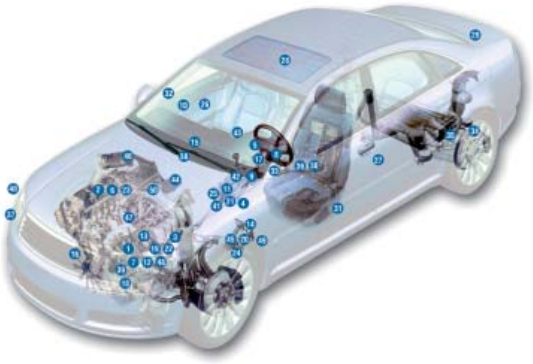
Quality policy

We embrace quality. The zero ppm target can only be achieved through consistent prioritization and alignment of all activities to quality and reliability. Immediate response to quality risks has maximum priority for each and every employee. All members of the workforce are obliged to inform their supervisor immediately if they identify quality weaknesses they cannot eliminate themselves. Here again, our principle is: Avoid faults rather than eliminate them.

Our quality management system is aligned to the international automotive standard ISO/TS 16949. To monitor its effectiveness, KPIs are regularly defined and then assessed and improved by means of audits. The quality policy and the fundamental procedures and interactions within our company are documented in our quality management manual. These can be consulted by anyone – customers, suppliers, employees – at any time. The use of this manual ensures that all commercial, technical and organizational activities are uniformly aligned to the prime goal – quality.

"Using energy intelligently"

Company and Products



Micronas, as a globally operating designer and manufacturer of semiconductors, develops leading system solutions based on innovative integrated circuits, also known as ICs or microchips. The company markets a wide range of Hall sensors and microcontrollers for automotive and industrial electronics. A car alone offers more than sixty different possible applications, and in industry, too, microchips from Micronas are making increasing inroads into new areas. Potential applications are opening up, for example, in construction vehicles and robots for automatic manufacturing processes – and the office coffee maker may well feature a Micronas sensor solution, too.

The automotive industry, more than any other, is dependent on reliable, high-performance semiconductor products for the electronics of modern vehicles. The overriding priority here is efficient energy consumption to conserve the environment. The latest vehicle generation requires smart sensors that combine precision and ruggedness with the ability to process the measurements direct. Micronas products play a key role here – whether Hall switches to determine a position or intelligent linear Hall sensors to measure distance or motion. There are many areas of application in which the Micronas system solutions allow greater efficiency in combination with reduced fuel consumption and lower emissions.

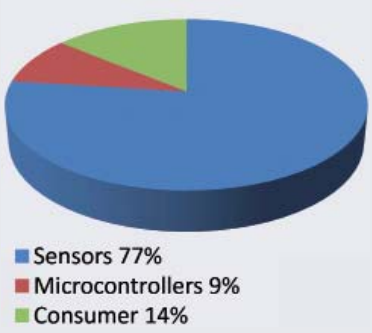
Through the deployment of innovative and increasingly powerful electronics, the electricity consumption of modern vehicles is rising consistently, pushing up the fuel consumption figure even further. Intelligent energy management systems are able to reverse this effect, but it is essential that they are able to measure the various flows with maximum accuracy. The power sensor developed specifically by Micronas for this task can measure direct and alternating current precisely and without any contact. The electric sensor can be perfectly adapted to any contactless electricity measuring application through selection of the suitable magnetic field range, by programming the necessary output behavior, and by selecting an optimum housing. This sensor is suitable, for example, for monitoring batteries in modern hybrid and electric vehicles to ensure that the energy is used intelligently.

In the section entitled „Environmental relevance of Micronas products" on page 10, you will find further examples of how sensor solutions from Micronas are helping to save energy and thus contributing to environmental protection.

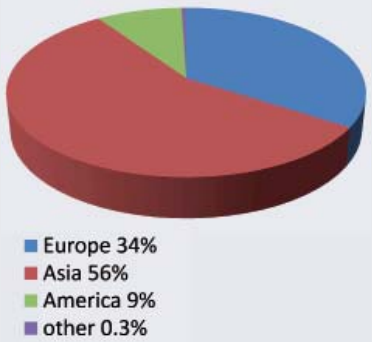
FACTS AND FIGURES

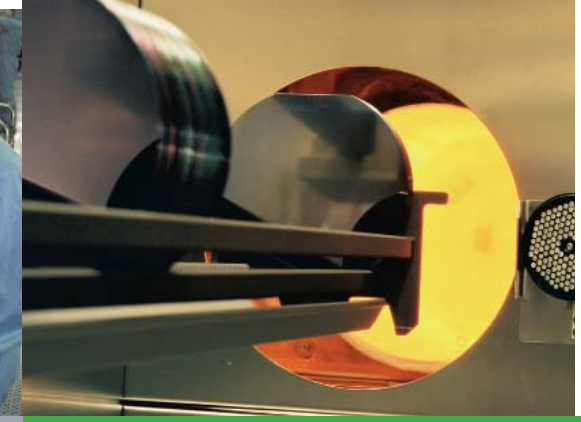
Micronas in 2010:

- Corporate headquarters in Zurich, Switzerland (SIX Swiss Exchange: MASN)
- Operational management and production in Freiburg, Germany
- 873 employees worldwide, of which some 780 are based at the operational headquarters in Freiburg
- Test center in Glenrothes, Scotland, with 72 employees
- Sales of CHF 190 million / EUR 138 million
- Investment and current expenses of EUR 1.2 million in corporate environmental protection.
- Sales by product group:



- Sales by market:





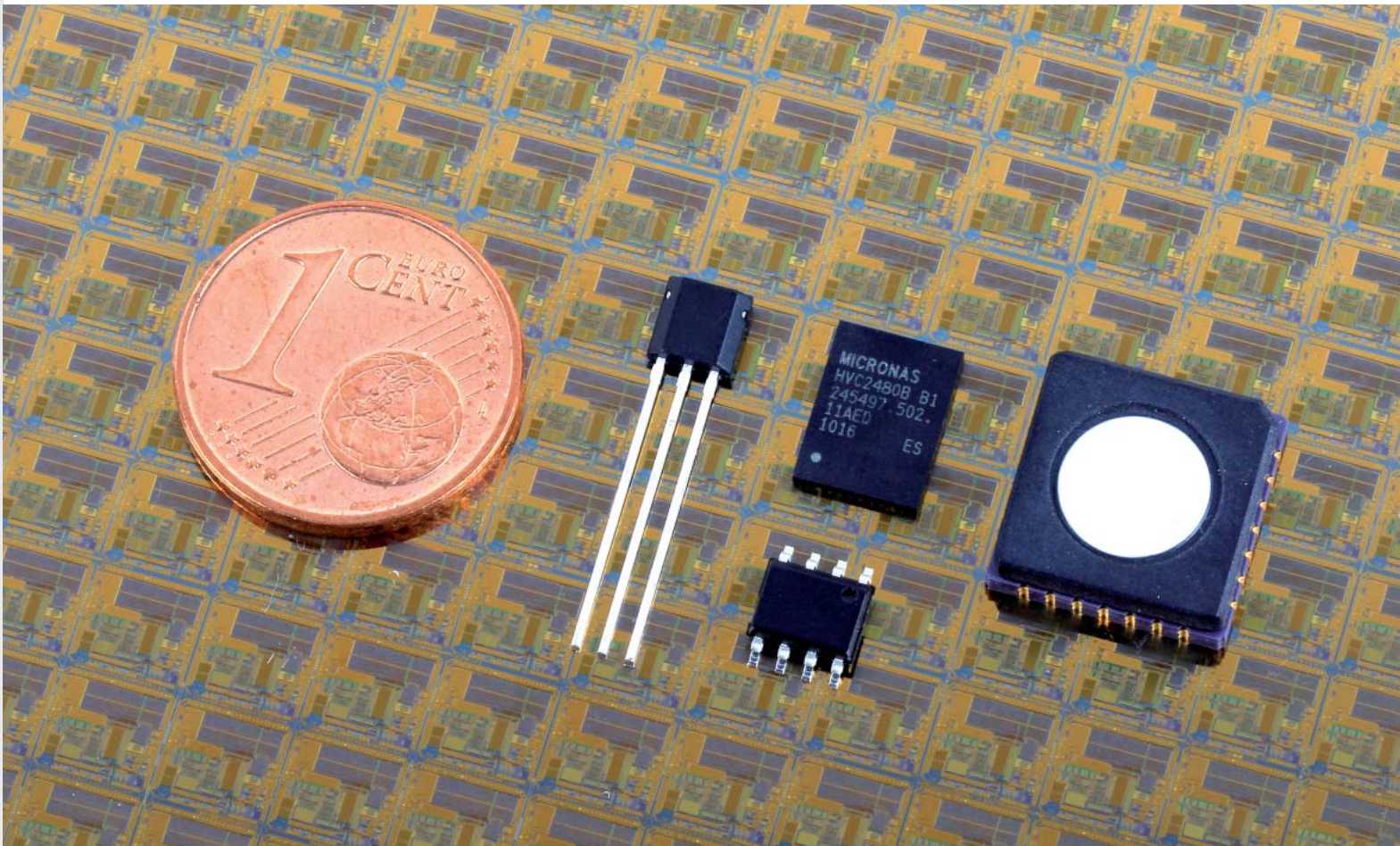
"300 single processes"

Production and Environment

Just as complicated as the products themselves is the production process: Nearly 300 individual physical and chemical processes are required to produce the electronic circuits – or silicon chips – on an ultrapure, monocrystalline silicon wafer. The tiny structures measure less than 0.5 µm and are thus less than 1/100th of the diameter of a human hair. They can just about be detected in an optical microscope.

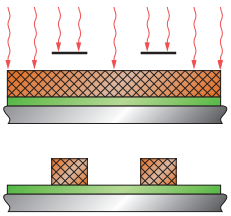
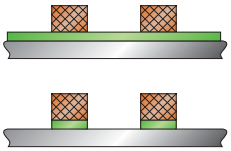
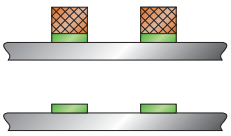
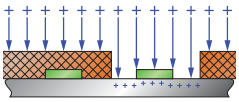
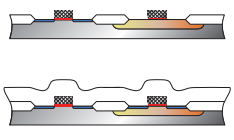
During the production process at Frontend (which is described schematically on page 6), several thousand Hall sensors are formed on each wafer. In turn, every Hall sensor has tens of thousands of transistors, resistors, capacitors, and diodes. The Frontend processes take place in a class 1 clean-room environment (max. 35 particles >0.5 µm are allowed in a cubic meter of clean air). The first step involves scribing of the wafers with a laser and subsequent cleaning. In a recurring sequence of coating, lithography, etching, implantation, cleaning and high-temperature treatment to create the structures and adjust the electronic properties of the active elements, the silicon chips are produced on the wafer. After grinding of the rear surface and monitoring of the electrical parameters, the wafers are delivered to Backend. At the chip assembly stage, the wafers are first sawn into individual chips. These are bonded to a copper leadframe, and the electrical contacts of the chip are connected to the leadframe by means of a 20 – 25 µm thick gold wire. Subsequently, the chips are encapsulated by a compression molding compound and the copper leadframes tin-plated in a galvanizing process. Finally, the outer electrical copper contacts coated with tin are shaped in line with the standard specifications. After checking the electrical functions during final measurement, the products are packed ready for dispatch.

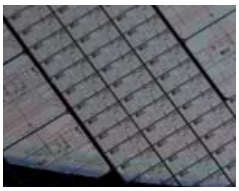
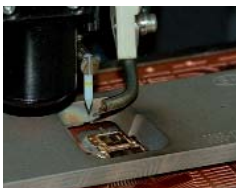
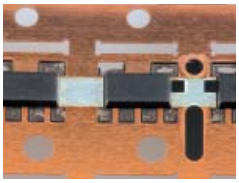
Depending on the type of housing, a Hall sensor typically weighs between 34 mg and 120 mg.



"Processes, environmental impact, action"

Production and Environment

Frontend processes		Main environmental impact	Remedial measures
	**Lithographic processes: For the structuring of layers by photolithography, i.e. the transfer of structures from a photo mask to the photo resist on the wafer**	Use of solvent-based photo resists and developers, plus the formation of coating residues and spent solvent mixtures	Environmentally relevant photo chemicals have been replaced by safer ones. Photochemical residues and spent solvent mixtures are sent for thermal recycling. Solvent vapors are conveyed to a waste air treatment plant.
	**Dry etching processes: To transfer photo resist structures to the oxide and metal layers beneath by etching**	Use of combustible, corrosive, toxic and environmentally hazardous process gases, emissions of gases with high greenhouse gas potential and formation of waste gases	The volume of process gas has been reduced by making improvements to the process control. Exhaust gases are conveyed to a waste air treatment plant.
	**Cleaning processes: For wet-chemical cleaning of the wafer surface and to remove the resist** **Wet chemical etching processes: To transfer photo resist structures to the layers beneath**	Use of hazardous substances, i.e. acids, alkalis, special chemicals, solvents and the formation of spent chemical and solvent mixtures	The use of chemicals has been reduced by making improvements to the process control and by introducing an automatic, accurately controlled dosage system. Hazardous chemicals have been replaced by safer ones. Spent chemicals are sent for internal and external recycling. Chemical vapors are conveyed to a waste air treatment plant.
 	**Ion implantation processes: For doping certain areas with foreign atoms such as arsenic** **High-temperature processes: For the production of extremely pure oxide and dope layers to adjust the electronic properties of the transistors**	Use of flammable gases and small quantities of toxic gases, plus formation of waste gases	Flammable gases are subsequently incinerated. Safety gas cylinders are used for toxic gases. Exhaust gases are conveyed to a waste air treatment plant.
	**Coating processes: For the deposition of insulating oxide and conductive metal layers**	Use of flammable, corrosive, toxic and environmentally hazardous process gases, emissions of gases with high greenhouse gas potential and formation of waste gases	The volume of process gas has been reduced by making improvements to the process control. Exhaust gases are conveyed to a waste air treatment plant.

Backend processes		Main environmental impact	Remedial measures
	**Parameter test and probe test of the chips: All chips on the wafer are tested for their proper functioning.**	Electricity consumption	Implementation of various electricity saving projects, see page 11
	**Grinding / sawing of the wafers: The wafers are ground to a final thickness and then sawn up into individual chips in fully automatic precision units.**	Use of water and formation of waste water	At present no measures
	**Contacting (bonding): The individual chips are bonded to a copper leadframe (die bonding), the electrical contacts of the chip are contacted to the copper leadframe by means of a thin gold wire (wire bonding).**	Electricity consumption, use of gold wire	Use is made of the latest bonding technology with lower electricity consumption per chip. Various electricity saving projects are being implemented, see page 11.
	**Molding: The chips are encapsulated on the copper leadframe with a molding compound to protect them from environmental influences during use.**	Use of molding compounds plus generation of dust and plastic scrap	Molding compounds are fed to the compression molding tools free of dust. Filtered dust is conveyed for special external waste treatment. Use of "green" molding compounds is being continuously increased. Plastic scrap is conveyed externally for thermal recycling.
	**Galvanizing: The copper leadframe with the chips is coated with tin so that the products can be soldered by the customer.**	Use of hazardous substances and production of galvanic waste water, production of waste metal	In the galvanizing units, metals are deposited electrolytically from the working solutions. Metals from the galvanic rinse water are precipitated in the central waste water treatment unit. Metal waste from working solutions and rinse water is recycled. Galvanic solutions are either treated in the central waste water treatment plant or disposed of externally.
	**Forming, final testing, packaging: The external electrical contacts are formed, the products measured and packed.**	Production of plastic scrap, electricity consumption	Trays are cleaned and reused. Plastic scrap is recycled. Various electricity saving projects being implemented, see page 11

"All demands met"

Environmental Management

Trained officers at Micronas

Micronas has for many years had environmental and safety standards in place that go well beyond those required to comply with the relevant legislation. In the year 2000, an environmental management system was introduced at the central Micronas development and production site in Freiburg. As well as corporate environmental protection, the system also covers the fields of industrial safety and fire protection and is referred to in short as the "ESF System".

The key aspects of the system are compliance with statutory requirements, a process of continuous improvement, preventive and defensive fire protection, and the implementation of risk analyses and hazard assessments in all sectors of the Freiburg production site. Since 2002, the Micronas test center in Glenrothes, Scotland (Micronas Ltd., 72 employees) has also had its own system for corporate environmental protection, based on the ESF. Both systems are certified to the international ISO 14001 standard, while the ESF Management System in Freiburg also meets the approval of the European EMAS regulation (Eco-Management and Audit Scheme)[1)].

The main elements of the ESF Management System to ISO 14001 / EMAS are described below in more detail.

The management has defined the Micronas environmental policy in its Principles of Action. The ESF organization currently comprises

- 4 full-time ESF staff, including the Environmental Management Officer,
- 22 trained officers from different areas of the company,
- 25 members of the internal emergency response team,
- 25 safety officers,
- 41 company paramedics, and
- 64 duty officers responsible for safety in all areas of production.

The staff are given regular training, internally or externally, according to their respective function in the ESF system. In Glenrothes in Scotland, the Quality and Environmental Management Officer, backed by a team of 18 colleagues, is responsible for the „Integrated Management System for Environmental Protection, Health, Safety and Quality", which has been in place there for some time.

The elements of the ESF Management System are described in the ESF handbook and also in the relevant process instructions and standard operating procedures, and can be referred to on the Intranet by all the employees. They constitute the rules for compliance with the company's environmental policy.

Micronas operates a process that ensures that all legal obligations and customer requirements are adhered to. Foreseeable developments in environmental protection and in legislation are channeled into planning at an early stage. All trained officers, managerial staff and plant managers are actively involved in this process. Micronas cooperates in full with the regulatory authorities and makes sure that all the necessary permits are available. This not only makes for legal security, it also brings advantages in economic terms. It avoids extra costs caused by late reactions, and it also enhances the trust and confidence of Micronas stakeholders, in other words, the employees, customers, investors, suppliers, risk insurers, site neighbors and the general public.

As part of the process of setting its environmental targets, Micronas first evaluates the relative importance of the direct and indirect environmental aspects. Direct environmental aspects are, for example, CO_2 emissions, which result from the consumption of electrical and fossil energy, and the consumption of chemicals. Indirect environmental aspects are, for example, product lifecycle-related aspects (design, development, packaging, transport, use and recycling/waste disposal), the environmental performance of suppliers, and the emissions generated by commuters traveling to and from work. After this, an assessment is carried out of the extent to which the main environmental aspects can be influenced through the execution of environmental projects to reduce consumption and/or emissions. You can find a list of the environmental projects on page 11.

One of the most important ways to ensure transparent internal and external communications is the regular publication of the Environmental*Statement* and Environmental*News*, in which we document the company's environmental performance. Environmental management is not a one-off effort, but a continuous objective, because the conformity of the system is monitored every year by an independent auditor. Apart from that, regular internal audits are also carried out to ensure that the procedures defined in the ESF System are being adhered to.

[1)] Regulation (EC) no. 1221/2009 on the voluntary participation by organizations in a Community eco-management and audit scheme

PRINCIPLES OF ACTION

Statutory Basic Conditions

We are committed to compliance with all applicable environmental and industrial safety legislation. In order to achieve this commitment, an effective internal and external system of approval management, risk analysis, and emergency precautions is implemented and developed. Our primary goal is to prevent and avoid environmental impacts and safety risks during normal operation, and in the event of an emergency, rather than limiting effects and/or damage.

Motivated, Responsible and Competent Personnel

For efficient environmental protection, we need motivated and environmentally aware employees, with management providing a good example. By encouraging open communication, our employees are informed about all projects and activities in relation to both our local environmental management system and corporate environmental protection. Moreover, extensive training for our employees in environmental protection, accident prevention and health protection is performed regularly.

Clear Structures

With clearly defined responsibilities and processes for all activities related to the environment, and the health and safety of employees, we have created the infrastructure for efficient and effective environmental, and industrial health and safety protection and development. In this context, we attach special value to interdisciplinary teamwork.

Principle of "Sustainability"

In assuming its responsibility for future generations, Micronas regards avoidance of environmental pollution as the top priority. This requires making optimum use of the resources we consume, such as materials and energy. This applies to all the phases of our product lifecycles we are able to influence, including processes within the company, and requires a forward- looking assessment of potential environmental impacts in all cases.

Cooperative Dealings with our Interest Groups

We take precautions to ensure that all contractors working on our factory site comply with our environmental and safety standards. In cooperation with our suppliers, we explicitly encourage them to implement the same environmental standards as Micronas. Furthermore, we advise our customers regarding all the environmentally relevant characteristics of our products. As a matter of course, we also promote close cooperation with authorities, and conduct a dialog with interested members of the public. We communicate openly our environmental policy, environmental impacts and environmental performance.

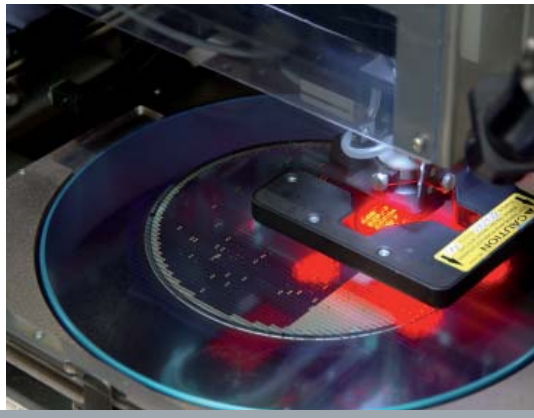
Continuous Monitoring and Control

We regularly collect, record and evaluate environmental data. From this, we are able to control our environmental performance and implement appropriate continuous improvements, and to define new environmental goals and programs.

Efficiency

We regularly perform system audits to ensure the efficiency and development of our environmental management system. Performance indicators are regularly determined and evaluated for the assessment of environmental efficiency. Any deviation from the environmental policy or environmental goals, results in the immediate application and monitoring of appropriate corrective actions.

In 2010 Micronas received an award from the city of Freiburg for its sustained support of environmentally friendly transportation to the company. More than a third of the employees use the annual travel pass for public transport subsidized by Micronas.



Environmental relevance of Micronas products

Environmental Projects

According to the German Federal Environment Office, CO_2 emissions in Germany have been declining almost continuously since 1990. This pleasing development shows that the government's climate policy is bearing fruit and that the need for active environmental protection has been taken on board by industry, trade and the population as a whole. Semiconductor components made by Micronas are widely used in intelligent control circuits, and, as such, are making an important contribution to further reducing CO_2 emissions.

Micronas sensors help to cut fuel consumption.

Unlike conventional hydraulic power steering, which is based on a servo pump continuously driven by the car's engine, electric power steering (EPS) is a purely electrical system that gets by entirely without hydraulics. Linear Hall sensors from Micronas can detect various manipulated variables, such as angles or positions. With an electric power steering system, a sensor first records the movement of the steering column, after which other electronic components bring an electric motor into play to assist the steering. The key point here is that the electric motor is only called on when it is actually needed. A continuously running hydraulic pump consumes an average of 280 W / h, so that without it, the fuel saving can be as much as 0.28 ℓ / 100 km.

The electronic throttle control (ETC) is barely noticed by the driver, but its effect on driving behavior and fuel consumption is considerable. Unlike the conventional system in which a cable or rod connects the accelerator pedal to the throttle, this solution is entirely free of contact. An electronic control unit evaluates the data it receives from various sensors relating to the position of the accelerator, the speed of the engine and the vehicle speed. From the result of the calculation, it activates an electric motor to move the throttle into the optimum position. The HAL 825 from Micronas, for example, provides the electrical control unit with information about the current position of the throttle. This fast, contact-free, high-precision control system also has advantages for the environment. Through the material savings and the efficient use of the engine torque, a car's fuel consumption can be reduced by more than 5%.

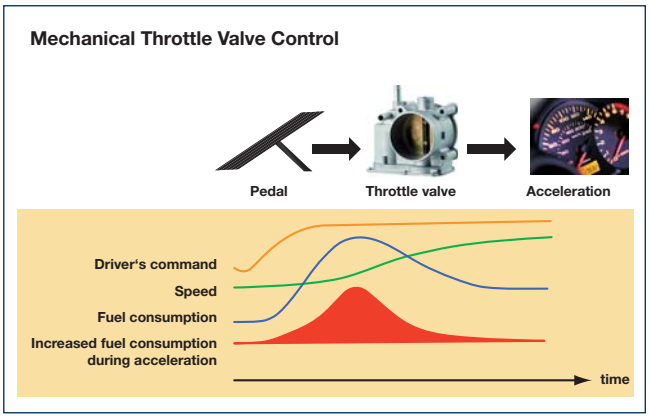
Micronas products contribute to environmental protection.

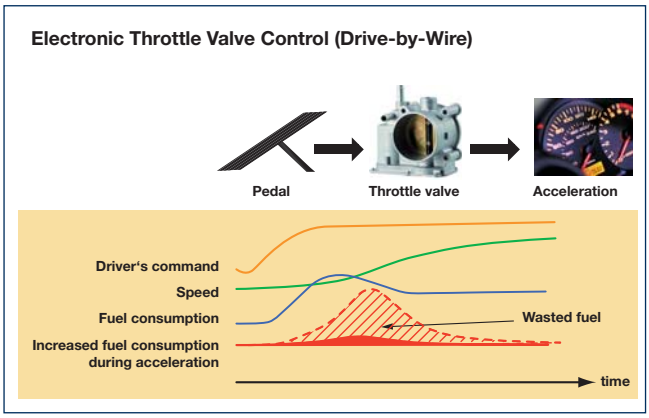
According to Germany's Federal Environment Office, road traffic now accounts for over 17% of total CO_2 emissions in Germany. Micronas sensors are helping to significantly lower the CO_2 emissions of a vehicle.

A leading supplier to the car industry tested the emissions of various models of well-known car brands based on the New European Driving Cycle (NEDC). The driving time for this is 20 minutes, whereby the vehicle stands still for an average of a quarter of the time, primarily in urban traffic. A start/stop system prevents unnecessary fuel consumption by switching off the engine when at a standstill. This lowers the CO_2 emissions in the NEDC by 5%, and by as much as 8% in urban traffic. Electricity sensors from Micronas are used in the decisive phase of engine start. For a smooth restart, it supports the on-board power system and guarantees continuous electricity supply.

In the air-conditioning sector, the Micronas mySENS® gas sensor technology opens the door to effective solutions for demand-driven heating, air-conditioning and ventilation. In this way, Micronas is contributing to improved comfort and energy efficiency in buildings – an important aspect in the development of "green buildings".

The examples given here show that Micronas products are being used in applications that play an important part in energy-saving projects.





Overview of current and planned environmental projects

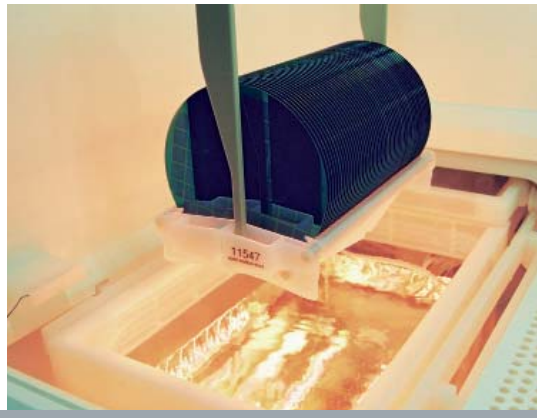
Location Freiburg

Subject	Goal	Measure	Dept. responsible	2010	2011	2012
Energy management	Electricity savings of 1,583,000 kWh / year (389 t CO_2 / year)	Raise flow temperature of the process cooling water	Plant Engineering and Facilities	●	●	
		Introduction of heat exchangers for free cooling in winter in parallel with the refrigerating machines	Plant Engineering and Facilities		●	●
		Automatic power management on PCs and laptops	IT Operations	●	●	
		Feeding in of compressed air generated in the production of nitrogen gas into the compressed air system	Plant Engineering and Facilities		●	
		Introduction of parallel tests with Hall through the use of multiple test heads	Backend Engineering	●	○	
		Optimized plant utilization with wet-chemical etching	Waferfab Engineering		●	
Resource management	Saving of chemical formulations and sulfuric acid in stripping, etching and cleaning processes amounting to 13,800 kg / year	Reconstruction of the process equipment to reduce stand-by consumption	Waferfab Engineering	●		
		Optimization of the service life of the chemical solutions in the process tanks		●		
		Reduction of a two-step wafer cleaning process to a one-step process with optimized process time		●		
	Reduction of biocide consumption for cooling water treatment by approx. 2,600 kg / year	Setting up a biocide dosage station for cooling water treatment and continuous automatic dosage depending on the free chlorine content	Plant Engineering and Facilities	●		
Immission control	Use of refrigerants with low to zero ozone-depletion potential	Refrigerant plants to be switched from R22 to alternative refrigerants	Plant Engineering and Facilities	●	●	●
Material management	Guarantee safe delivery of materials and media	Installation of monitoring processes to comply with the requirements of the European REACH[1]) and CLP[2]) regulations	Environment, Safety and Fire protection	●		

Legend: ● Implementation ○ Extension ● Completed, goal achieved

[1]) Regulation (EC) no. 1907/2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

[2]) Regulation (EC) no. 1272/2008 on the Classification, Labeling and Packaging of chemical substances and mixtures (CLP)



Environmental Data 2010

Environmental Data

As part of the above-described process of defining environmental targets, Micronas has evaluated the relative importance of possible direct and indirect environmental impacts / influences.

Direct environmental impacts

Important direct environmental influences are

- CO_2 emissions from the consumption of electricity, fossil energy sources and PFC gases[1)],
- the consumption of process chemicals and, connected with this, the resultant production of hazardous spent acids

Micronas strives, as part of its continuous improvement process, to reduce the impact of these environmental effects.

The environmental data for 2010 for the Freiburg site are given below. With these key figures, we comply with the requirements of the EMAS regulation.

This report covers both the absolute consumption figures and the consumption figures standardized to the total gross value added – the so-called core indicators. The core indicators are related to the year 2010. Standardization to the total gross value added over the last four years provides the required comparability of the consumption data. Special effects resulting from the restructuring measures in 2009 were not taken into account when determining the total gross value added.

The core indicators are closely connected to the utilization of production capacity. The higher the utilization, the more favorable the core indicators, because the influence of standby consumption declines accordingly. Production utilization dropped in 2009, which meant that the core indicators increased. This effect is recognizable with more or less all the core indicators.

Energy efficiency
The consumption of electricity and fossil energy resources – in this case almost exclusively natural gas – represent the core indicator "energy efficiency". The proportion of renewable energies in the purchased electricity mix in 2008 was approx. 19%, a figure which rose in 2009 to nearly 42%. In comparison, the electricity mix for Germany as a whole contained just over 17% renewables (source: BDEW).

Water
Municipal water is used for the production of ultra-pure water for production, for sanitary and cooling purposes, and in waste air scrubbers.

To reduce water consumption, increasing use has been made in recent years of reclaimed water. Reclaimed water is very slightly contaminated rinse water from process plants and waste water from the ultra-pure water treatment plants. The rinse water is collected and reused in process cycles where less stringent demands are made on water quality. At present, between 80,000 and 90,000 m^3 reclaimed water is currently being recycled per year. The reclaimed water is used predominantly for feeding recooling plants and waste air scrubbers.

Material efficiency
The consumption of chemicals and process gases constitutes the core indicator "material efficiency". Chemical consumption is made up of process chemicals for production and chemicals for water treatment and waste water treatment. The core indicator for process gas consumption has remained constant for the last four years because the consumption figure is basically dependent on production utilization.

Emissions
The core indicator „emissions" is, according to EMAS, made up to two parts:

Total annual "emissions into the air" – calculated according to GEMIS[2)] from the natural gas consumption – from 2007 to 2010 amounted from 39 to 42 kg sulfur dioxide (SO_2), from 2,160 to 2,300 kg nitrogen oxides (NO_x) and from 27 to 29 kg of dust. Because of the low quantities involved, standardization to the total gross value added was dispensed with.

Total annual "emissions of greenhouse gases" is calculated from the consumption of electricity, fossil energy sources and the emission of PFC gases[1)]. The electricity purchased by Micronas in the years under review contributes – without going in to the annual fluctuations – approx. 250 g CO_2 / kWh a year. In comparison, the German average is over 500 g CO_2 / kWh. Because of the increasing utilization of production capacity in 2010, PFC emissions rose again, but the core indicator "CO_2 emissions" almost returned to its figure of 2007. Greenhouse gas emissions of methane (CH_4) and dinitrogen monoxide (N_2O) are negligible.

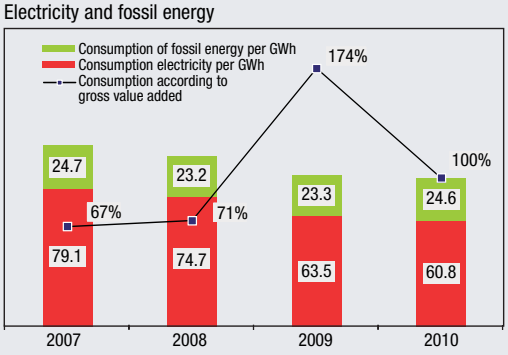
[1)] Perfluorinated carbon compounds such as tetrafluoromethane (CF_4) and hexafluoroethane (C_2F_6), but also nitrogen trifluoride (NF_3) and sulfur hexafluoride (SF_6) with a high greenhouse gas potential. PFC gases are used in semiconductor manufacture as process and cleaning gases.

[2)] Global emission model of integrated systems, GEMIS 4.6

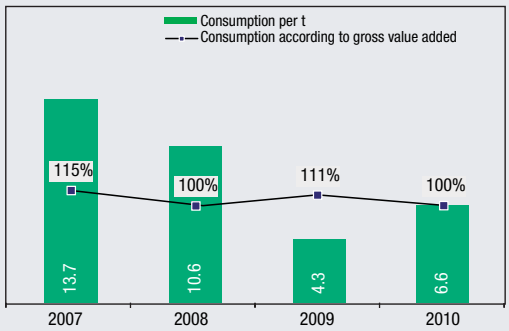
MICRONAS FREIBURG

Absolute consumption resp. CO_2 emissions
Consumption resp. CO_2 emissions referring to the gross value added in %, normalized to the year 2010

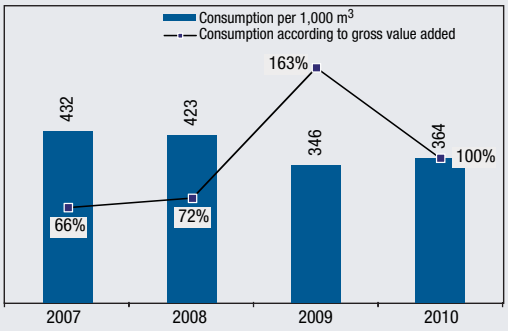
Electricity and fossil energy



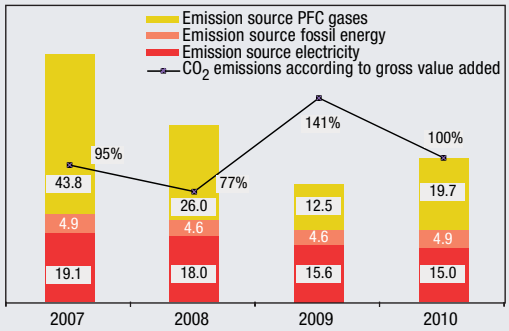
Process gases



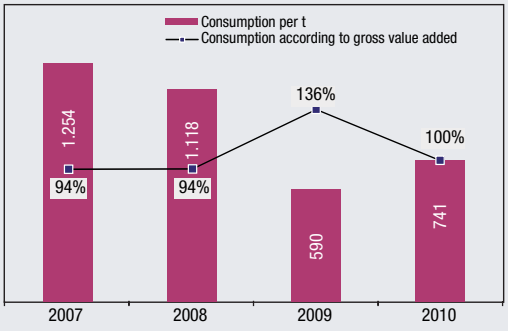
Water



CO_2 emissions per 1,000 t



Chemicals



Direct Environmental Impacts at Glenrothes

Before delivery, a functional test is run on the finished chips – a large proportion in the Test Center in Glenrothes. The test equipment uses electricity, i.e. the most significant direct environmental impact is energy consumption and the associated CO_2 emissions.

Key figures 2010:

- Energy consumption: 3.4 GWh electricity (corresponding to 51.6 t CO_2)
- Main waste fractions: 15 t paper for recycling; 7 t plastic waste for disposal
- Notifiable accidents: none

Investment and current expenses in corporate environmental protection (waste management, water protection, soil decontamination, noise reduction, air pollution control, climate protection, nature protection, landscape conservation) in Freiburg

	Million Euro
2007	1.3
2008	1.5
2009	1.2
2010	1.2

Environmental Data 2010

Environmental Data

Waste
In terms of waste legislation, the core indicator „waste“ consists of both hazardous and non-hazardous waste. More than 90% of the hazardous waste is made up of acids and solvents, of which a large proportion is recycled. For this reason, the core indicators for chemicals and hazardous waste follow similar patterns. The recycling rate for the entire waste volume in the years from 2007 to 2010 has been consistently high, namely around 83%.

Biodiversity
The core indicator “biodiversity” refers to the land use, expressed in square meters of built area. In 2010, the figure was approx. 12,300 m^2. It has not changed since 2007.

Production yield
Another important contribution to improving all core indicators is made by raising the production yield. The yield is an important statistic in the semiconductor industry. The fewer chips on a wafer that subsequently fail due to defects, the fewer wafers have to be started in the Waferfab, and the less electricity, media, materials etc. must be used in total. In turn, less waste has to be disposed of. This applies to the same extent to the production yields in Assembly and Test. Projects put in place with the aim of raising yields are at the same time environmental projects for improving the core indicators.

Indirect environmental impacts

The main indirect environmental factor at Micronas is the environmental and health relevance of hazardous substances contained in some molding compounds. Green molding compounds do not contain any environmentally relevant halogens such as bromine and chlorine and no substances hazardous to the health such as antimony trioxide. In 2010, “green” molding compounds accounted for over 40%. The switch to green molding materials is being made in close coordination with our customers, because extensive qualification measures have to be performed.

Our customers build our products into systems which, in turn, are used in motor vehicles. The application of our products in the automotive industry is thus another important indirect environmental impact. As described in more detail in the section entitled “Environmental Impact of Micronas Products”, our products are used, for example, to reduce the energy consumption of vehicles.

The following section describes achievements in the fields of industrial safety and fire protection.

Industrial safety

The approval process for new plants and reconstruction projects guarantees that the trained officers and employees of the Plant Engineering and Facilities department approve the plans in advance. Following installation and before final approval, hazard assessments are performed at the various workplaces. Where workplaces involve contact with hazardous substances, operating procedures are drawn up in accordance with the regulations on hazardous substances. These provide the supervisor with an instruction document for the employees.

Trained staff and officers regularly carry out inspections to ensure that the legal regulations are being adhered to, and, if necessary, derive corrective measures to be implemented by the persons responsible.

Hazardous substances at Micronas are divided into various storage classes according to their physical and chemical properties, and stored separately. All store rooms and chemical supply plant rooms are equipped with modern safety devices to avoid chemical release – e.g. with twin-wall pipes, bunds, and leakage sensors.

At Micronas in Freiburg, the accident figures are well below the comparable index of the Employers‘ Liability Insurance Association. In 2010, there were four minor reportable accidents, without any particularly frequent occurrence in any one area.

Fire protection

Because the fire protection officer is a member of the approval management team, he must authorize new facilities and rebuilding measures. He defines the protective targets after previous analysis of the buildings and surrounding area in agreement with the risk insurer and, if necessary, the regulatory authority. He adapts the organization of the fire protection facilities and escape routes, and monitors the implementation of the fire protection systems as far as the equipment and construction work is concerned. Finally, he updates the technical documentation and the regular testing schedules.

The risk insurer has again awarded Micronas the AAA certificate for the Freiburg site for 2010, documenting the fact that the company consistently attains an outstanding standard of risk management.

Emergency protection

Despite all preventative measures, emergencies can still arise. The job of the emergency task force is to keep the effects of an emergency to a minimum.

Environmental Data

In an emergency – e.g. smoke or fumes – a smoke detector automatically sends an alarm to the emergency call center. The watchman on duty immediately alerts the investigation team in line with the alarm plan and, if necessary, notifies the emergency task force, which then puts into place the required emergency measures.

Part of the task force is the internal emergency response team, which also includes trained firefighters. The head of the emergency response team regularly organizes exercises in realistic scenarios (e.g. smoke, leakage of hazardous gases and liquids). The safety officer on duty then takes charge of the operation and deals with the emergency together with members of the emergency response team and the company paramedics.

The fire protection concept and the emergency plans also include notifying the Freiburg fire department in critical emergency situations. Once the fire department has received an alarm, it can arrive on the Micronas factory site within a few minutes. For 2011, detailed tours of the site have been arranged with members of the Freiburg fire department so that they can obtain a better picture of the main hazard areas and the type of incidents that could occur.

Training measures

In addition to the legally prescribed training, such as training at the workplace, instruction of external employees and the handling of hazardous substances, regular training is also carried out on the hazardous properties, toxicology and handling of chemicals and gases as well as suitable protective measures. Every year, as part of the emergency planning, intensive training is given to the safety officers on duty in all production areas.

Delegated officers take part regularly in courses to update their knowledge and to obtain qualifications relating to industrial safety, fire protection, immission protection and water protection.

In September 2010, the training bus of the Employers' Liability Insurance Association was used to instruct the safety officers on their duties and to inform managerial staff on matters of responsibility and liability.

Micronas Technology Park

In the last few years, the Micronas site has developed into a technology park with six external companies renting facilities to perform research, development and production in various fields. There are a number of synergies here because all firms require similar infrastructures – infrastructures that Micronas maintains and offers to outside companies.

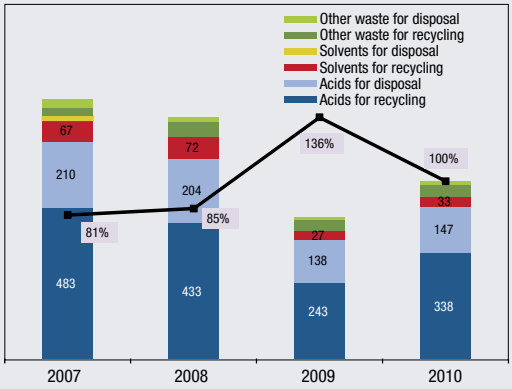
Micronas has signed an agreement with all these companies on aspects of environmental protection, industrial safety and fire protection. This so-called ESF agreement defines the responsibilities of both Micronas and the external companies in matters of e.g. personal and building protection, receipt of hazardous substances, and waste disposal, and defines the interfaces of processing plants with incoming and outgoing products and materials. The outside companies are integrated into the Micronas fire protection concept and emergency plan.

WASTE

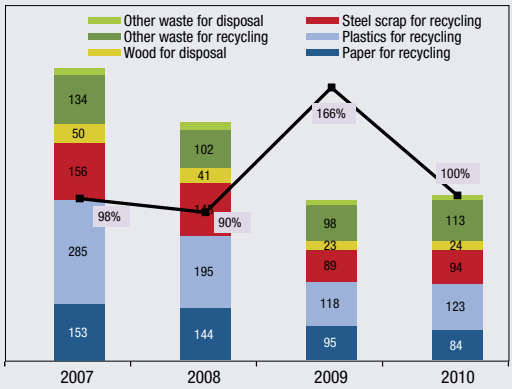
Waste in t

Waste referring to gross value added in %, normalized to the year 2010

Hazardous waste (t)

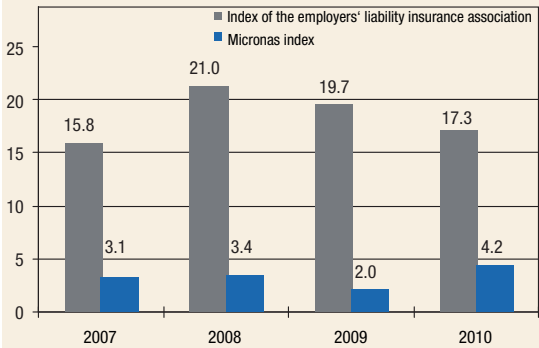


Non-hazardous waste (t)



ACCIDENTS

Notifiable accidents per 1,000 employees



From 2008 on, the data basis of the employers' liability insurance association index has been changed due to the merger of several employers' liability insurance associations

MICRONAS

EMAS
Verified environmental management
DE-126-00053

Environmental Statement

The next consolidated Environmental *Statement* will be submitted for validation at the latest in July 2014. The next updated Environmental *News* will be submitted for validation in July 2012.

Environmental Verifier

Dr.-Ing. R. Beer (Permit no. DE-V-0007)
Intechnica Cert GmbH (Permit no. DE-V-0279)
Ostendstr. 181
90482 Nuremberg, Germany

Validation

Dr. Reiner Beer, with EMAS environmental verifier registration number DE-V-0007, accredited or licensed for the scope 26.1 (NACE Code Rev. 2), Manufacture of electronic components and boards, declares to have verified whether the site as indicated in the consolidated environmental statement with registration number D-126-00053 meets all requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organizations in a Community eco-management and audit scheme (EMAS).

By signing this declaration, I declare that:

– the verification and validation has been carried out in full compliance with the requirements of Regulation (EC) No 1221/2009,

– the outcome of the verification and validation confirms that there is no evidence of non-compliance with applicable legal requirements relating to the environment,

– the data and information of the consolidated environmental statement of the site reflect a reliable, credible and correct image of the site activities, within the scope mentioned in the environmental statement.

Nuremberg, July 2011

Dr. Reiner Beer, Environmental Expert

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