



Freiburg and Glenrothes Locations

“Preserving what we value”

Micronas
EnvironmentalNews 2012

to EMAS/ISO 14001

“Sustainable environmental protection – Safeguarding the long-term future of our sites”

Editorial



Our company continued to develop positively in fiscal year 2012, and it was in fact the most successful year for us since we began focusing on automotive and industrial electronics. Especially in the automotive segment, Micronas managed to increase its sales and earnings compared with the previous year, posting a double-digit EBIT margin of 14.4%. 2012 was characterized by a number of positive changes, such as the founding of the Innovation Center under the leadership of Klaus Heberle, and the complete repositioning of the Automotive Business Center under the management of Dr. Dirk Behrens as Vice President Automotive, with the aim of bringing new products to market even faster.

We have been able to successfully position our product line of embedded controllers for smart actuators on the market and in 2012 we began with their large-volume delivery. Our leading product here is the HVC 2480B, which is used, for example, in automated grill modules (AGM) for vehicles. The AGM is positioned directly in front of the vehicle's radiator and regulates the supply of cooling air through the angle of the ventilator flaps. This function continuously guarantees an optimum engine operating temperature and enables improved aerodynamics through the targeted deflection of the driving air flow in relation to vehicle speed. These benefits result in lower fuel consumption.

The latest generation of our GAS 86xyB gas sensors, which are based on the unique proprietary mySENS® technology, has been extremely well-received by the market. They enable the simultaneous detection of two gases and the integrated measurement of ambient temperature and atmospheric humidity despite their much smaller size and much lower power consumption than their predecessors. Furthermore, they are based on the proven, inexpensive standard CMOS manufacturing technology, which allows the sensor elements for gas, temperature and moisture measurement to be combined on one chip.

Both these lead products are manufactured in the QFN package line that was newly installed at the Freiburg site in 2012. The outstanding feature of this package form is that the electrical connections (pins) do not extend on the side beyond the mold package, but are integrated flat into the underside of the housing. This means we can offer our customers inexpensive package forms that save an enormous amount of space compared with the usual surface-mounted devices (SMD). The newly installed QFN package technology opens up innovative packaging possibilities for our semiconductor devices and meets both current and future market requirements. With the installation of the QFN line, we have secured direct access to this technology and thus taken another step towards safeguarding the future of the Freiburg production site over the long term.

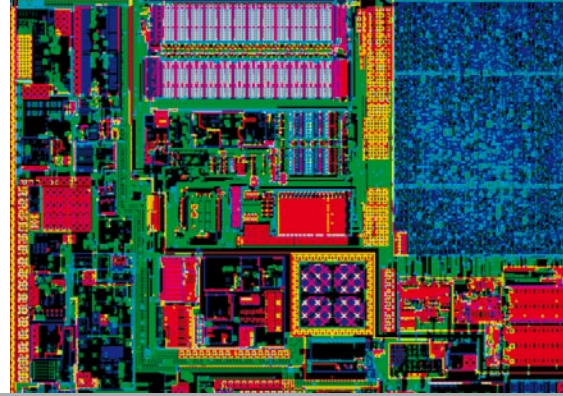
Last year, in conjunction with our customer DENSO, we celebrated delivery of the 500 millionth Hall sensor to the automotive industry. This means that, in all, Micronas has supplied the automotive and industrial electronics market with more than two and a half

billion Hall sensor solutions, a fact that makes us particularly proud.

Micronas products are based on top-notch technologies and comply fully with the mega-trends of environmental protection and safety. We are committed to sustainable environmental protection not only with our products but also with our clean production methods. We hold all the necessary operating permits. With our ESF management system, we are already well positioned, but we constantly strive to improve our environmental performance even further.

In last year's *EnvironmentalNews*, we told you about our energy management system, and this year we would like to introduce you to our water resource management system. On the next page, you will find out more about two water projects that have already been successful.

Matthias Bopp
Chief Executive Officer



“Water resource management – possibilities, potentials, advantages”

Environmental Projects



The water resource management team (l. to r.): Misu Ratescu, Christian Mueller (team head), Konrad Slowik and Michael Schöllhorn

Life as we know it would be impossible without clean water. Industrial production, our social well-being and our health have been dependent on it for over 150 years.

In 2011, by launching a flagship initiative called „Resource Efficient Europe“ as part of the „Europe 2020“ campaign, the EU committed itself to the sustainable management of water as a vital resource. Details of this are given in the blueprint of November 2012 on the safeguarding of Europe’s water resources.

Water resource management

To supplement the energy management initiative started by Michael Schöllhorn in 2011, a water resource management project was launched last year by Dr. Christian Mueller. It pursues a holistic approach: to reduce consumption and minimize costs for energy and water – the two most important resources for Micronas.

In the EU’s new blueprint to safeguard water resources, the newly established water resource team identified three key measures for Micronas that could be actively and positively influenced: water conservation, the efficient use of water, and transparency.

Water conservation

The philosophy behind the conservation of (waste) water is simple: What is not discharged into the water does not subsequently have to be removed from it – at additional cost.

Successful waste water treatment requires extensive know-how on the optimum management of the water/effluent flows. It also requires knowledge of the substances contained in the waste water and above all those not contained in it. At Micronas, the waste water is efficiently separated according to its quality and quantity into five substreams.

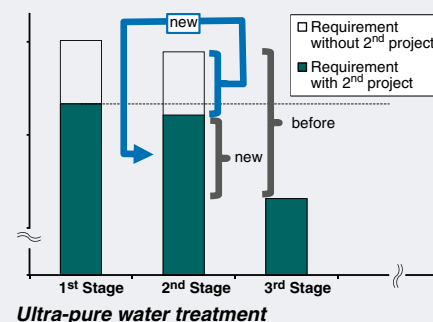
In the first part of the project, the team determined what substances were actually contained in the waste water. Based on current regulations to protect the aquatic environment, several hundred undesirable substances in the natural water environment were recorded and compared with the listed Micronas substances.

The results showed that only a few thousandths of the undesirable substances in natural water are discharged with the waste water into the public sewage system. The concentrations are so low that they would even be negligible for natural waters.

Water efficiency

There are two ways of using water efficiently: Firstly, to use as little water as possible in production processes, and secondly, to recover and recycle as much of this water as possible from production. At Micronas, a system for recycling the “reclaim water” has been in place for many years now, leading to savings of up to 20% of the fresh water requirement. The reclaim water is then fed, for example, to the recooling units of the building’s air-conditioning system.

In the second part of the project, the team therefore looked at the potential savings in ultra-pure water treatment. When drinking water is treated to turn it into ultra-pure water, so-called concentrate streams are generated, which are thrown away. After a detailed analysis of the water flows and water quality, possibilities were found for internal recycling. It is now possible, for example, to return the concentrate stream of the ultrafiltration process (particle retention) ahead of the reverse osmosis (retention of salts and molecules). All these measures combined can yield savings of approx. 10% in water treatment.



Transparency

Transparency requires a thorough knowledge of the key water management data. These are essentially the volume, quality and frequency of the water needed and the waste water produced. Transparency also means disclosing the facts to an interested public. Micronas satisfies both requirements.

Summary

The two projects described in this article looked at ecological and economic issues concerned with water resource management. They have since been implemented, saving valuable resources and bringing financial benefits to Micronas. The purity of our waste water complies with present and future requirements, and the water-conserving possibilities have been identified and implemented.

Overview of current and planned projects

Freiburg Location

Environmental Projects

| Subject | Goal | Measure | Dept. responsible | 2012 | 2013 |
|---------------------------------------|---|---|------------------------------------|------|------|
| Energy management¹⁾ | Electricity savings of 250,000 kWh / year (40 t CO ₂ / year) | Introduction of heat exchangers for free cooling in winter in parallel with the chillers | Plant Engineering and Facilities | ● | |
| | Electricity savings of 10,000 kWh / year (2 t CO ₂ / year) | Electricity saving by relocation of hazardous substances in the warehouse and optimization of the electric power consumption of the fan | | ● | ● |
| | Electricity savings of 15,000 kWh / year (3 t CO ₂ / year) | Electricity saving in probing/final testing of linear Hall sensors through the use of dual-core controllers | Backend Engineering | ● | ● |
| | Electricity savings of 100,000 kWh / year (16 t CO ₂ / year) | Automatic power management on PCs and laptops | IT Operations | ● | |
| | Electricity savings of 100,000 kWh / year (20 t CO ₂ / year) | Electricity savings through introduction of Thin Clients | | ● | ● |
| | Electricity savings of 270,000 kWh / year (54 t CO ₂ / year) | Electricity savings in the computer center through virtualization | | ● | ● |
| 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 | ○ | ○ |
| Resource management | Waste reduction by using new reagents in the treatment of galvanic waste water | Use of bentonites and Fe-III chloride | Plant Engineering and Facilities | ● | ● |
| | Reduction of water consumption by 10% in ultra-pure water production | Efficient guiding of the water / waste water streams in the 5-step treatment facility | | ● | ● |
| | Saving of approx. 1.4 t of chemicals per year by process optimization | Introduction of throughput of controlled bath changes in electroplating | Backend Operations | ● | |
| | Future savings of 250 kg / year copper lead frames in compression mold cleaning | Use of paper strips instead of lead frames in compression mold cleaning | | ● | |
| | Saving of approx. 150 l / year (tin concentrate hazardous to aquatic environment, additives, acids) | Savings of chemicals by low-flow filtration | Backend Assembly | | ● |
| Occupational safety | Increase in occupational safety, savings of tin and cleaning chemicals, waste reduction in electroplating | Substitution of the mechanical/ chemical process through a melting process in the cleaning of the tin cathode and recycling of tin | Backend Operations | | ● |
| | Increase in occupational safety, chemical/waste reduction | Cleaning of small components in self-enclosed cleaning box for small parts | | | ● |
| Health protection | Improved health protection | Initiation of activity courses to build up muscles and initiation of Shiatsu treatment | Working group on health protection | ● | |

¹⁾ Calculation of the CO₂ savings is dependent on the electricity mix of the power supplier in the relevant year



Micronas at a Glance

Micronas at a Glance

FACTS AND FIGURES

Micronas in 2012

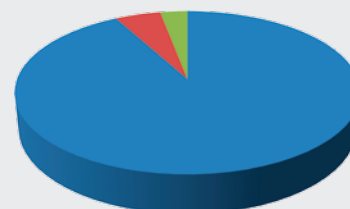
- ◆ Headquarters of holding company in Zurich, Switzerland (SIX Swiss Exchange: MASN)
- ◆ Operational management and production in Freiburg, Germany
- ◆ 893 employees worldwide, of which 788 work at the operational headquarters in Freiburg
- ◆ Test center in Glenrothes (Scotland)
- ◆ Sales of CHF 168 million / EUR 140 million
- ◆ Micronas is an Authorized Economic Operator (AEO) and regarded as particularly reliable and trustworthy. The aim is to safeguard the continuous international supply chain from the manufacture of a product to the end-user.
- ◆ In 2012, Micronas received the status of "Known Consignor". This status, which is based on the European legislation, is an important step against terrorism in civil air freight.
- ◆ Investment and ongoing expenditures of EUR 1.4 million in corporate environmental protection (waste management, water protection, soil decontamination, noise reduction, air pollution control, climate protection, nature protection, landscape conservation)

| | EUR million |
|------|-------------|
| 2009 | 1.2 |
| 2010 | 1.2 |
| 2011 | 2.2 |
| 2012 | 1.4 |

Test center in Glenrothes (Scotland)

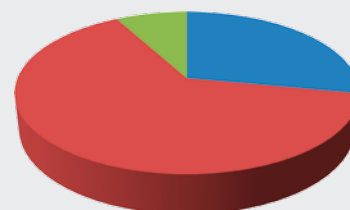
- ◆ 70 employees
- ◆ Energy consumption: 3.1 GWh, equivalent to 1,500 t CO₂
- ◆ Main waste fractions: 3 t paper and board, 3 t plastics, 5 t metal into recycling
- ◆ No notifiable accidents

Sales distribution according to production lines



- Sensors 92 %
- Controllers 5 %
- other products 3 %

Sales distribution by region



- Europe 28 %
- Asia 64 %
- America 8 %

Micronas Certificates



ISO 14001 Freiburg



ISO 14001 Glenrothes



EMAS Freiburg



AEO Freiburg



Environmental Data 2012

Environmental Data 2012

The following charts show the 2012 environmental data for the Freiburg site, which is the Micronas headquarters and its largest production site. By publishing these figures, we comply with the requirements of regulation (EC) no. 1221/2009, the so-called EMAS regulation.

The bar charts show the absolute consumption figures, while the linear diagrams show the consumption normalized to the total gross value added – the so-called “core indicators.” The core indicators themselves are then related to the year 2012. Normalization to the total gross value added over the last four years ensures

the required comparability of the consumption data.

Other environmental data for 2012:

- The natural gas consumption of approx. 20,500 MWh according to GEMIS¹⁾ corresponds to equivalent emissions of 35 kg of SO₂, 2,000 kg of NO_x, and 24 kg of dust which are considered as insignificant environmental aspects
- The sealed area (core indicator biological diversity) is 39,200 m², the unsealed area is 12,300 m².
- The recycling quota for the entire waste produced in 2012 was 83 %.

Total energy consumption from renewable sources and their proportion of the annual total consumption:

| | | |
|------|--------------------------|-----|
| 2009 | 26.4 GWh | 30% |
| 2010 | 42.5 GWh | 50% |
| 2011 | 35.2 GWh | 45% |
| 2012 | Figure not yet available | |

The photovoltaic unit installed at the end of 2011 generated around 318,000 kWh in 2012.

Occupational safety and health protection

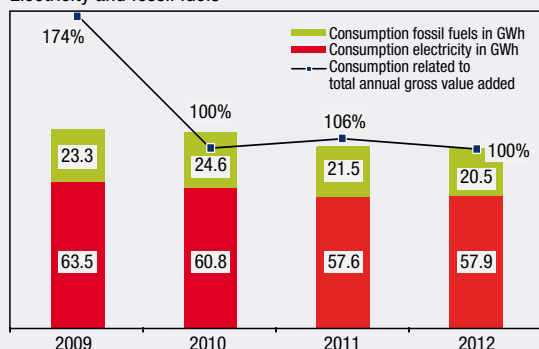
At Micronas in Freiburg, the accident figures are well below the comparative index of the Employers' Liability Insurance Association. In 2012, there were four minor reportable accidents, with-

MICRONAS FREIBURG

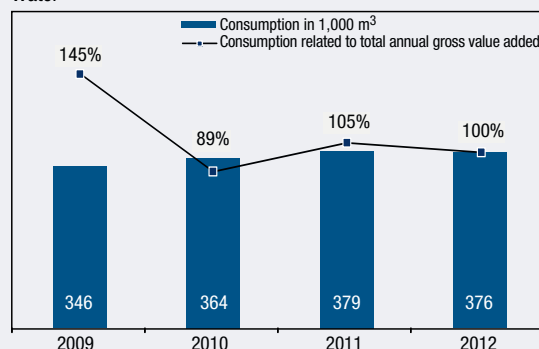
— Absolute consumption

— Consumption related to the total annual gross value added in %, normalized to the year 2012

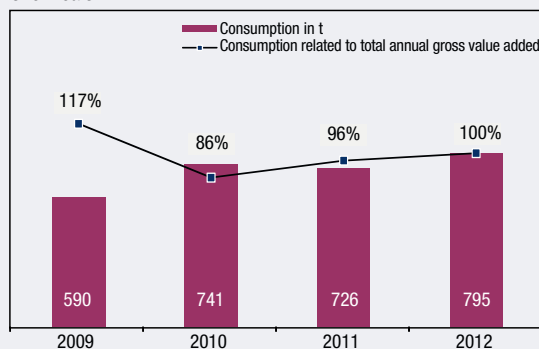
Electricity and fossil fuels



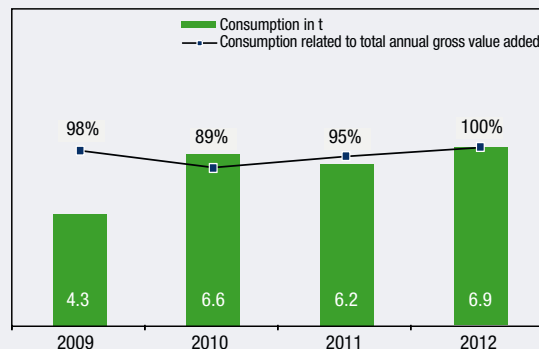
Water

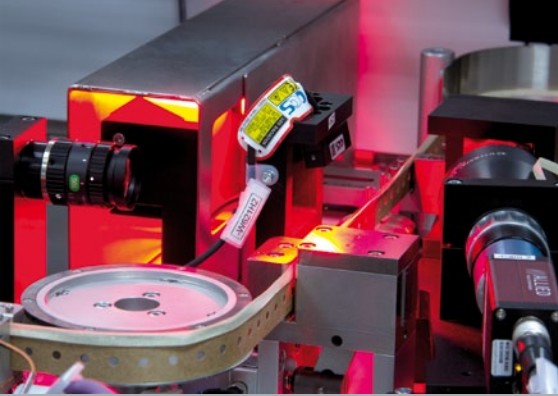


Chemicals



Process Gases





Environmental Data 2012

out any particularly frequent occurrence in any one area. We regularly check whether hazardous substances can be replaced by non-hazardous materials (principle of substitution). Where legal changes are made to bans or to the regulation of substances e.g. in Appendix XIV and XVII of the REACH regulation²⁾, we check and document the fact that these substances are contained neither in our products nor in the raw and auxiliary materials used for their production.

Environment and transport, sports

- Bus and rail timetables
- Subsidies for regional tickets for public transport

- Help with car/ride sharing
- Bicycle checks
- Sponsorship of activities for sports groups: running (participation in Freiburg (half) marathon), cycling, indoor soccer

Emergency management

- 38 exercise drills with the 26 members of the emergency task force
- Training of six new safety officers who act in production areas as officers in charge in an emergency event
- Training of 92 persons in the handling of fire extinguishers

- Automatic alarms from rented areas of companies on the Micronas Technology Park are connected to the hazard alert system of Micronas (hand fire extinguishers, smoke alarms, gas detection linked with automatic emergency switch-off and clearance of buildings)
- Building evacuation drills with employees of rental firms and Micronas

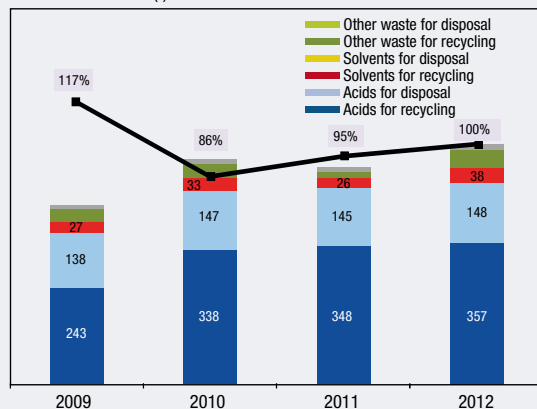
¹⁾ Global emissions model for integrated systems

²⁾ Regulation (EU) no. 1907/2006 of the European Parliament and Council of December 18, 2006 on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), Annex XVII: Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles

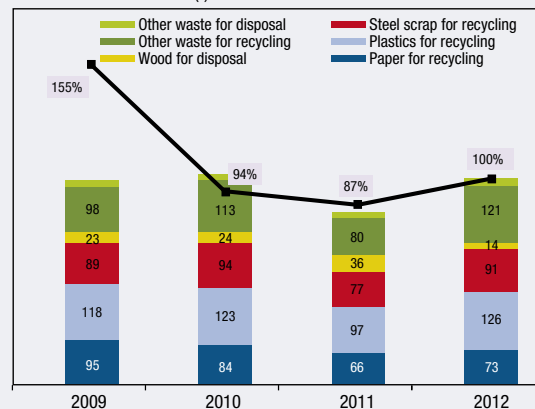
WASTE

Waste in t
Waste related to total annual gross value added in %, normalized to the year 2012

Hazardous waste (t)



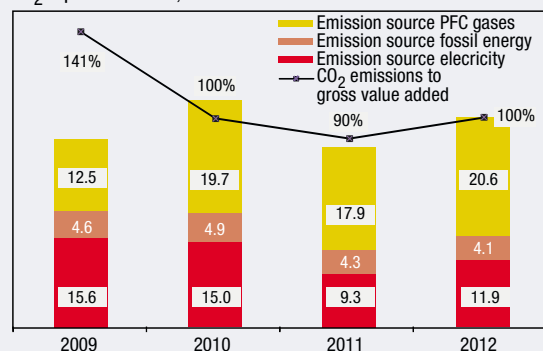
Non-hazardous waste (t)



CO₂-EQUIVALENTS

CO₂ equivalents
CO₂ equivalents related to the total annual gross value added in %, normalized to the year 2012

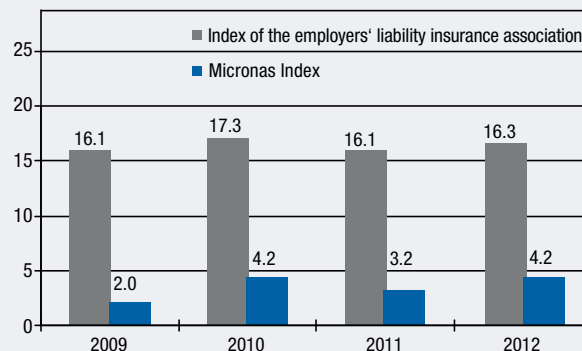
CO₂ equivalents in 1,000 t



ACCIDENTS

Notifiable accidents per 1,000 employees

Accidents





Environmental Statement

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

Environmental Verifier / Environmental Verifier Organization

The authorized environmental verifier / environmental verifier organization are as follows:

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

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 updated 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 2013

Dr. Reiner Beer, Environmental Expert

Micronas GmbH

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