

# Aesculap AG

Environmental Statement 2011



Consolidated Environmental Statement of Aesculap AG  
for the Tuttlingen location.

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*There is much discussion about the environment and climate protection at present.*

*Aesculap is doing its part and will award the Aesculap-Environment-Prize for the twentieth time.*

*Awareness and initiative are the key requirements. Environmental protection demands a real effort from everyone.*

Aesculap Environment Prize 2011

## 1. Board of Management Foreword

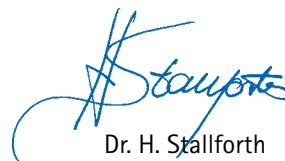
Only by adopting a responsible approach to nature, can we ensure the existence of a humane future environment for us and our children. As a business enterprise, we are also part of this society and are therefore duty-bound to play our part in environmental protection.

The binding requirements for our company in relation to environmental protection have been laid down in national and international law, directives, regulations and norms. In order to meet them, each and every employee has to follow certain rules and standards in terms of protecting the environment.

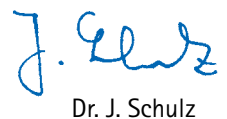
In the year 1993, we already decided to implement an environmental management system out of our concern for the environment. In 1995, in the EU Eco-Audit, we were the first medical technology company to have our commitment to the environment confirmed. Certification of our environmental management system in accordance with the international norm DIN EN ISO 14001 was granted following the 1999 revalidation audit. This version is the updated and revised presentation of our company.



Prof. Dr. H.-P. Knaebel



Dr. H. Stallforth



Dr. J. Schulz



## 2. Company Presentation

In the one hundred and forty year long history of the company, Aesculap has developed from being a workshop for surgical instruments into an international player. In the Tuttlingen location, there are about 3,000 people employed.

Products and services for all surgical core processes are the central focus of Aesculap, a division of B. Braun Melsungen AG. The product range includes surgical instruments, implants, (e.g. for Orthopaedic and Spine surgery), endoscopes, surgical motor systems, suture material, container and storage systems and also products for vascular therapy.

The label Aesculap which represents a wide range of business activities, combines top-quality products with process-approached intelligent services resulting in economic efficiency. Aesculap is a reliable and recognised partner throughout the complete surgical process flow in the clinic.

Aesculap owes its success as one of the best in the business, to the fact that its employees never settle for an initial idea, but are

constantly on the lookout for the best possible solution. They are people who check, query and optimize each and every development.

Therefore, Aesculap is much more than a supplier of high-precision surgical instruments: a partner that listens intently, thinks along with the customer and understands customers' requirements, demands and delivers on its promises. It provides them with high-standard products, services, and training courses to cover all areas of operation.

The value-retention repairing of instruments and medical devices by ATS ( Aesculap Technical Services) extends the utilization period of the product.

The provision of the environmental management system motivates management and employees alike to adopt environmentally-safe working practices.



### 3. The Environmental, Occupational Health and Safety Protection Policy of Aesculap AG

1. The company's management declares the protection of the environment, together with the health, safety and well-being of our employees, to be an integral part of Aesculap's company policy.
2. The consistent adherence to all pertinent laws, rules and regulations is fundamental to our environmental, occupational health and safety protection policies. We apply the use of modern technologies to constantly improve environmental, occupational health and safety protection. We regard the care and consideration of our staff as a matter of obligation.

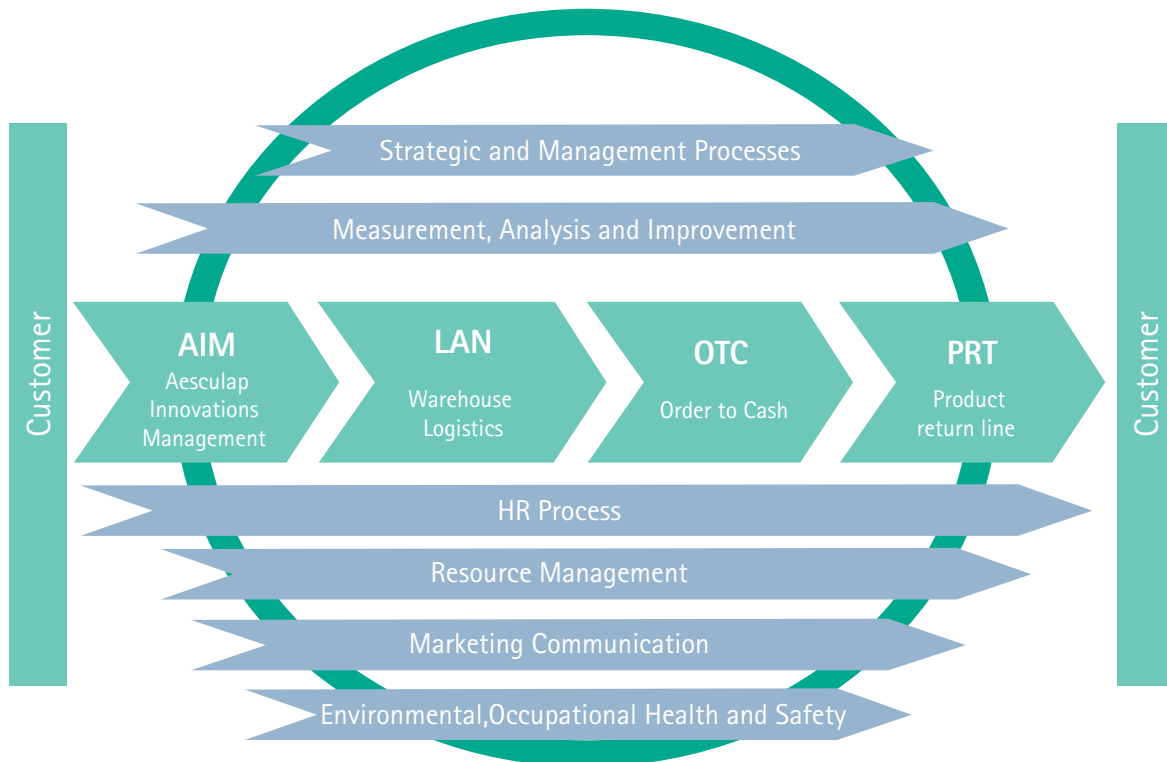
### 4. Environmental Management System

The environmental management system is part of our integrated management system for quality, environmental, occupational health and safety protection. The guidelines are laid down in EU ecological audit regulations and in DIN EN ISO 14001:2005. These standards allow us continuous and sustainable in-house

3. Within the framework of our entrepreneurial decisions, we pay particular attention to the issue of environmental protection. In each case, we consider the complete life cycle of our products. We endeavour to bring ecology and economy into line with each other.
4. We use our integrated management system for environmental protection, occupational health and safety protection as a controlling mechanism to examine our preset targets. We involve our employees and also our workers' council in our activities. The examination of preset targets by management is a fundamental part of our integrated management system for environmental protection, occupational health and safety protection.
5. We view active environmental protection, occupational health and safety protection as a fundamental managerial function. Continuous training and open communication ensure that our staff identify with our environmental, health and safety protection policy and involve themselves in its implementation.
6. With regard to our environmental, health and safety protection policy, we are in active discussion not only in the surrounding area, but also with the authorities, associations, politicians as well as interested circles of experts.

improvement in environmental protection. The process-orientated structure of the integrated management system differentiates at top management level between leadership processes, business and support processes.

## Process Network



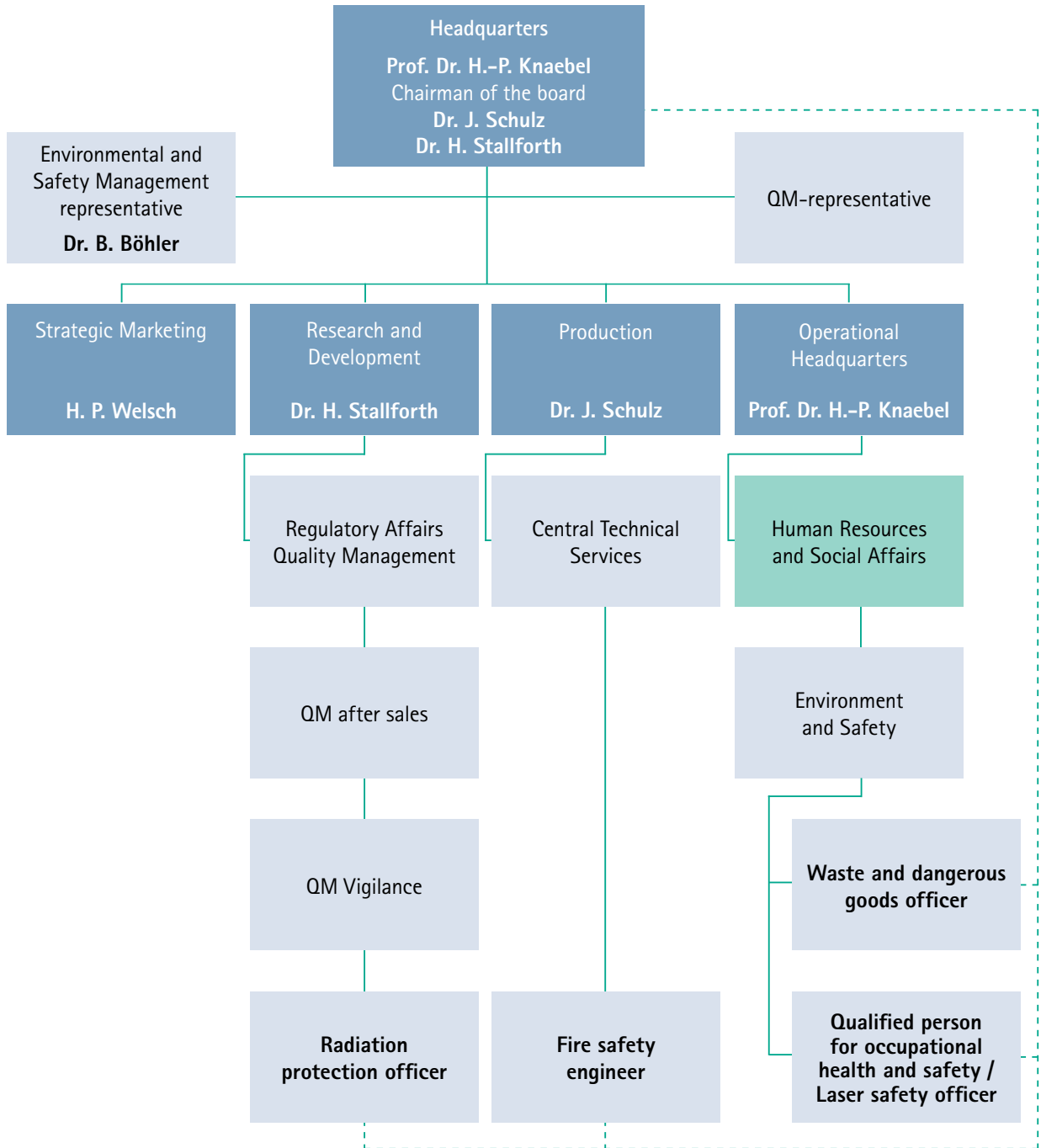
We regard a well-structured environmental management system as a valuable tool to optimize environment protection in terms of risk-cost-benefit considerations in each and every area and department. Our management system clearly defines where responsibility and cooperation for environmental protection lie within the company. It covers both organisational as well as technical measures. It ensures environmental protection in the company, leading to an ongoing improvement in the environmental situation there.

The management defines environmental policies and targets which are checked at regular intervals and adjusted if necessary. This means that any measures and projects for the fulfilment of a predefined environmental program can be taken into consideration during investment planning.

The Senior Vice President, Human Resources and Sozial Affairs and the Executive Vice President of Production and Logistics have been appointed to act for top management. An environmental, occupational health and safety committee has been established to coordinate and implement the management program. This panel consists of representatives from each relevant area and meets four times a year. The environmental management delegate is responsible for the maintenance of the management system, the advancement and implementation of processes, defined operational sequences and methods contained therein.

Because of the joint environmental management system according to EMAS and DIN EN ISO 14001:2005, annual internal audits take place. Within three years they correspond to a complete eco-management audit scheme (EMAS ).

**Environmental and Safety organisation**



= technically connected to BBM (B. Braun Melsungen)

## 5. Environmental aspects of the company

Input	Environmentally-relevant processes	Output
Raw materials / Commodities	Sales and Marketing	Products
Supplies	Development	Waste
Consumables	Production	Sewage
Packaging	- Metal working	Emissions
Water	- Cleaning processes	Noise
Energy	- Electroplating	
	- Wastewater treatment	
	- Slide grinding	
	- Fabrication shop / Punching shop	
	Warehousing / Logistics	
	Central Technical Services	

The use of various chemicals is essential during production. We are constantly working hard on replacing these chemicals with environmentally-friendly materials and also on minimising the quantities used. As part of our investment cycles, we are altering the methods used towards more efficient solutions.

The use of aqueous cleansing and non-halogenated hydrocarbons allow us to achieve environment and health protection in equal measure. The observation, documentation, and evaluation of our environmentally-relevant processes are used to check the chronological development of environmental factors as well as environmental effects.

### 5.1 Direct Environmental aspects

#### 5.1.1 Input:

##### 5.1.1.1 Raw materials and Supplies

	2004	2005	2006	2007	2008	2009	2010
Steel	948 t	717 t	680 t	814 t	845 t	770 t	787 t
Cobalt-Chromium-Steel	22.0	28.0	31.0	34.0	29.0	30.0	33.0 t
Aluminium	322 t	380 t	380 t	470 t	455 t	426 t	545 t
Titanium	53.2 t	56.9 t	57.1 t	60.0 t	59.0 t	55.0 t	62.5 t
Brass	8.3 t	7.4 t	7.4 t	9.0 t	7.0 t	5.0 t	4.0 t
Halogen-free solvent <sup>[1]</sup>	5,100 l	5,390 l	5,894 l	7,187 l	8,954 l	6,315 l	9,570 l
Halogenized solvent <sup>[1]</sup>	2,600 kg	2,275 kg	0 kg	0 kg	0 kg	0 kg	0 kg
Cooling lubricant, water based <sup>[2]</sup>	-	-	-	-	-	32.6 t	39.0 t
Oils and fats <sup>[2]</sup>	-	-	-	-	-	69.5 t	78.3 t
Cleaning substances, water based <sup>[2]</sup>	-	-	-	-	-	27.6 t	30.4 t
Lead-free premium gasoline	44,592 l	33,920 l	28,068 l	18,263 l	12,324 l	10,624 l	10,514 l
Diesel fuel	94,174 l	92,910 l	125,845 l	133,247 l	130,789 l	127,816 l	124,497 l

<sup>[1]</sup> Application in Cleaning Stations

<sup>[2]</sup> Figure first time included in 2009

### 5.1.1.2 Water

Municipal water finds a use as budget water for rinsing baths, for the static and flow-rinsing of surface treatment. Danube river water is only used in washroom and toilet areas where municipal water quality is not necessary. Up to the year 2007, an increase in production and in the number of employees combined with the intensified use of water treatment systems (clean- and ultra-pure water systems), resulted in an increase in water consumption.

In 2008, a reduction in total water consumption was achieved for the first time due to enhanced efforts to save water. The recorded increase in water consumption in 2009 can be traced back to the logistics centre's first fully operational year including the surrounding green spaces. The increase in 2010 is related to increased production.

	2004	2005	2006	2007	2008	2009	2010
Municipal water m <sup>3</sup>	32,565	37,315	41,738	46,843	45,111	47,240	59,796
Danube river water m <sup>3</sup>	14,489	14,847	17,904	15,680	15,657	15,113	9,953
<b>Total m<sup>3</sup></b>	<b>47,054</b>	<b>52,162</b>	<b>59,642</b>	<b>62,523</b>	<b>60,768</b>	<b>62,353</b>	<b>69,749</b>

### 5.1.1.3 Energy

An increase both in staff numbers and turnover in recent years has led to higher energy needs. Natural gas is virtually only used for the purpose of heating so that the consumption of natural gas depends heavily on the weather. By steadily improving the

insulation of the buildings, we have been able to retain heating energy needs at a constant level since 2004 despite the extension of buildings apart from fluctuations in the weather.

MWh	2004	2005	2006	2007	2008	2009	2010
Natural gas	17,605	16,727	16,697	16,088	15,666	16,465	16,808
Electricity	19,215	22,381	23,877	25,475	28,240	28,384	30,414
Heating oil EL	0	0	0	343	243	395	202
<b>Total</b>	<b>36,820</b>	<b>39,108</b>	<b>40,574</b>	<b>41,906</b>	<b>44,149</b>	<b>45,244</b>	<b>47,424</b>

## 5.1.2 Environmentally-relevant Processes

### Sales / Marketing

The sales and marketing staff take our customers' ideas on board and convey them to the research and development department to resolve them. Ecological considerations along with economic ones play a role in the designing of a product. Because customers are becoming increasingly sensitive with regard to the subject of environment protection and are demonstrating an environmentally aware buying pattern, we are able to offer appropriate solutions.

Ecological starting points are:

- Description of ecological problem areas
- Concepts for recyclable products which are gentle to resources
- Return of products at end of lifespan
- Sales representatives' vehicles

## **Development**

The basic rules for business environmental protection are already laid down at product development stage. The AIM manual (Aesculap Innovations Management) stipulates the procedures to be followed.

The environmental effects of new products and packaging are assessed in advance to meet all necessary listed requirements. The revaluation or disposal of products are accounted for on this list. Wound closure systems are developed from laboratory through to pilot plant scale in the CT section of our laboratories. Various laboratory chemicals are used there.

## **General Production**

The vast majority of goods manufactured on site undergo various metalworking processes. The current machinery inventory stands at 150 milling machines machining centers respectively, about 100 lathe machines and 36 grinding machines to mention only the most commonly used production facilities. Approximately 50 laser systems are used for welding and marking. Cutting oil and water-based cooling lubricants are used in machining and grinding. The service life of cooling lubricants is steadily improved through intensive cooling lubricant maintenance and continuous transition to central cooling lubricant reprocessing plants. Cooling lubricant waste is sent for external recycling.

## **Cleaning Processes**

In early 2006, the use of CHC solvents as a component cleaning agent was stopped. Since then, only two types of cleaning systems have been in use. One of them works with water-based cleaning substances and the other one with emission-free automatic cleaning systems, using halogen-free Hydrocarbons as a solvent.

## **Electroplating, Pickling, Wastewater Treatment**

Numerous systems for chemical surface treatment are in operation at the location. Microfiltration systems, nanofiltration systems and additional bath maintenance enable the cleaning baths to last for a maximum period. In this way, we save drinking water and produce less wastewater. The larger systems are connected to a modern wastewater treatment plant with vacuum evaporator technology. In the case of the smaller units, wastewater is collected in tanks and is treated in systems externally.

## **Slide grinding**

In all slide grinding processes, process water is recirculated. The lower fresh water requirement and the diminished amount of wastewater produced make the system economically successful.

## **Warehousing**

Staff in the electroplating department and in wastewater treatment work with chemicals and dangerous substances while cleaning components. Dangerous substances are only permitted to be used after release approval has been granted and when their use gives no rise for concern in relation to environmental or occupational protection. With the completion of the new dangerous substance warehouse in 2008, storage is now centralised in a separate detached building.

## **Logistics**

Because of our central warehouse delivery concept, fast delivery is essential in the interests of our worldwide customer base. Moreover, our products are at times fragile. Repeated handling can have a lasting effect on the condition of the incoming consignment.

A well-balanced, environmentally optimised distribution strategy provides fast delivery to our customers worldwide. Within Europe, we use parcel services to dispatch our products.

## **Technical Services**

Central Technical Services are responsible for the efficient use of energy and the provision of electricity, gas, water, heat and compressed air.

By measuring the consumption rate daily, we can identify variations straight away and can correct them immediately. Regular maintenance safeguards the optimal use of energy and minimises environmental pollution.

### 5.1.3 Output

#### 5.1.3.1 Waste

Aesculap collects the following material separately:

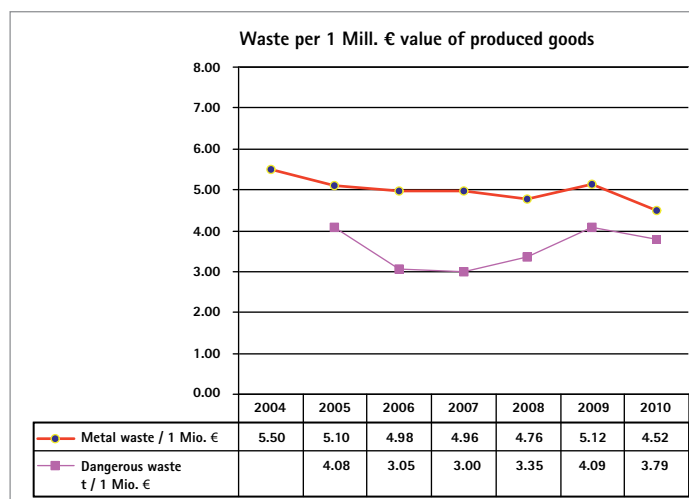
- Waste paper / cardboard
- Metal waste
- Electronic waste
- Scrap lumber
- Scrap glass
- Residual waste
- Miscellaneous non-dangerous waste
- Miscellaneous dangerous waste

Dangerous waste is divided into:

- Waste from electroplating and wastewater treatment
- Used cooling liquid and lubricants
- Waste oil
- Solvents
- Abrasive slurry
- Laboratory chemicals

In the case of "dangerous waste" and "miscellaneous non-dangerous waste", each single type of waste is categorised according to waste directory regulations. From 15 July 2006 onwards, the registration of different waste materials according to the above

terms and definitions was introduced in anticipation of a change in recycling and waste management law. Because of the change in classification criteria, data from the year 2004 cannot be compared directly with data from later years. Non-dangerous waste consists mostly of recyclable material and vitreous sand waste from internal matting systems.



The different fractions are divided up as follows:

Quantity in metric tons fraction	2004	2005	2006	2007	2008	2009	2010
Paper / cardboard	216	244	256	275	274	291	276
Scrap metal	691	723	739	838	842	812	848
Electronic scrap	5.6	4.1	3.8	8.9	7.4	6.3	4.9
Scrap lumber	51	54	95	107	97	104	146
Scrap glass	2.2	4.5	3.8	4.3	4.5	3.9	5.9
Residual waste	118	127	130	155	187	140	110
Food leftovers (staff canteen)	-	-	11.4	12.6	14.4	10.0	15.2
Miscellaneous non-dangerous waste	-	171	207	257	257	263	403
Dangerous waste	-	580	453	507	592	648	711
Recyclable	-	579	453	474	544	547	604

The raised value of the amount of dangerous waste disposed of in 2005 could be traced back to a technical defect in one of the two wastewater treatment units. The wastewater had to be treated

for a lengthy period in an external facility and was therefore subject to waste regulations. The increase in 2008 and 2009 was mainly due to the commissioning of two smaller electroplating

units which have a low wastewater output and are not equipped with wastewater treatment facilities. Their wastewater has to be treated externally.

In 2007, the disproportionate increase in residual waste arose out of the closure of an external warehouse. In 2008, there were greater quantities of residual waste associated with the move to the new logistics building.

The considerable fractions of miscellaneous non-dangerous waste are itemised in the following list.

Separate fractions of miscellaneous non-dangerous waste:

Quantity in metric tons fraction	2006	2007	2008	2009	2010
Miscellaneous non-dangerous waste total	207	257	257	263	403
from recyclable / packing material	113	130	138	154	206
from grit from matting systems	75	94	65	70	107
from organic waste / garden waste	4	9	15	13	46

The list below provides a breakdown of the substantial fractions of dangerous waste.

Separate fractions of dangerous waste:

Quantity in metric tons fraction	2006	2007	2008	2009	2010
Dangerous waste total	453	507	592	648	711
from cooling lubricant waste, water-based	252	303	334	319	375
from electroplating and waste water treatment residues	70	40	40	84	92
from grinding debris	68	89	111	113	120
from oil separator content	30	9	20	14	13
from waste oil	12	5	11	16	17
from oil contaminated operating material	13	22	21	22	23
from wastewater from small electroplating units	-	19	34	57	53

### 5.1.3.2 Process wastewater

Process wastewater comes from ultrasound cleaning baths, rinsing baths from electroplating units, pickling plants and slide grinding. It is treated in the wastewater treatment systems and a fraction of it is reused as preparation water or rinsing water. Due to the technology applied, the amount of wastewater could be reduced from an original amount of 1,680 m<sup>3</sup> to about 500 m<sup>3</sup> in the business year 1993/1994. The vacuum evaporator technology employed guarantees wastewater with exceptionally low contamination.

Changes in the product spectrum plus the increased utilization of the second wastewater treatment unit installed in the implant production in 2001, led once more to an increase in the amount of wastewater from the year 2003 on. However, because of the resultant limited contamination, it has very little environmental relevance. The decline in 2005 arose out of a defect in one of the internal wastewater treatment systems and the intermittent necessary treatment of process wastewater in an external facility.

	2004	2005	2006	2007	2008	2009	2010
Amount of wastewater in m <sup>3</sup>	522	413 <sup>1)</sup>	734 <sup>1)</sup>	858	960	867	974

<sup>1)</sup> At times, process wastewater had to be treated in an external facility because of a wastewater treatment system breakdown.

As part of our self-monitoring procedures, the wastewater quality of internal wastewater treatment systems is checked by an external test laboratory twice a year. In 2010, the following data were revealed.

Parameter	CSB [mg/l]	KW-Index [mg/l]	Co mg/l]	Ni [mg/l]	Cr(ges) [mg/l]	Cr VI [mg/l]
Critical value (notice of approval)	n.a.	n.a.	1.0	0.5	0.5	0.1
Indicated value plant implants in 2010	212	34.8	< 0.1	< 0.1	< 0.1	< 0.01
Indicated value plant instruments in 2010	133	0.6	< 0.1	< 0.1	< 0.1	< 0.01

### 5.1.3.3 Air

#### Exhaust air from heating systems

The emission values of exhaust air from the heating systems have been calculated for the following: Carbon dioxide, Nitrogen oxide, Sulphur dioxide and dust-forming substances via energy index. (Source: RAVEL 1993, Umrechnungsfaktoren für Energieträger, Source: BUWAL 1992 Emissionswerte)

The calculated values refer to natural gas and heating oil consumption (see 5.1.1.3). The increase in Sulphur dioxide emissions from the year 2007 onwards is related to the use of heating oil type extra light to heat a building purchased in 2007.

Pollutant emissions per Mwh	CO <sub>2</sub> [kg]	Dust [g]	NO <sub>x</sub> [g]	SO <sub>2</sub> [g]
Natural gas	202.1	0.86	323.7	2.9
Heating oil extra light	263.5	3.6	162.0	162.0

	2004	2005	2006	2007	2008	2009	2010
CO <sub>2</sub>	3,558 t	3,381 t	3,374 t	3,342 t	3,230 t	3,432 t	3,450 t
NO <sub>x</sub>	5,699 kg	5,415 kg	5,405 kg	5,263 kg	5,110 kg	5,394 kg	5,473 kg
SO <sub>2</sub>	51.1 kg	48.5 kg	48.4 kg	102.2 kg	84.8 kg	111.7 kg	81.5 kg
Dust	15.1 kg	14.4 kg	14.4 kg	15.1 kg	14.3 kg	15.58 kg	15.18 kg

#### Exhaust air from manufacturing processes

We use pickling lines both in the main factory and in the Benchmark Factory. The exhaust air from the pickling lines is treated via wet scrubber devices. The exhaust air from the polymer coating system is cleaned by a solid filter unit prior to release. The above

systems require no licence under present BImSchG legislation and do not have to be measured. The following indicated values have been determined by a recognised measurement body according to § 28 BimSchG as part of our self-monitoring-procedures.

Critical values according to TA Luft (Technical instructions on air quality)	Indicated values		
	2000 Electro plating	2004 Polymer coating	2002 Benchmark Factory
Hydrogen fluoride 3 mg/m <sup>3</sup>	< 0.05 mg/m <sup>3</sup>	1.28 mg/m <sup>3</sup>	< 0.05 mg/m <sup>3</sup>
Nitrogen oxide 500 mg/m <sup>3</sup>	7 mg/m <sup>3</sup>	-	20 mg/m <sup>3</sup>
Hydrogen chloride 30 mg/m <sup>3</sup>	-	0.33 mg/m <sup>3</sup>	-

The extracted dust-containing air from grinding and matting processes undergoes wet cleaning. The airflow of these processes has a typical dust concentration level of 6 mg/m<sup>3</sup>, resulting in a total amount of 4.7 t/a dust produced.

The greenhouse gases CH<sub>4</sub>, N<sub>2</sub>O and SF<sub>6</sub> are not used in the company and are therefore not emitted.

In 2010, during maintenance of a cooling system it was necessary to replenish 324 kg fluoride hydrocarbons (R134a). This is equivalent to 421.2 t CO<sub>2</sub> emission.

### 5.1.3.4 Ground

Due to the erection of a new building for the R+D department, we had, in 2006, a small increase in under roof area as well as a small reduction in unsealed ground area in comparison with 2005. In 2007, we bought adjoining premises and started to build a new logistics centre and an extension to one of the factories. In 2008

and 2009, there were no changes in the use of the site compared to 2007. In the year 2010 we bought another fully developed and completely sealed site .

	2005	2006	2007	2008	2009	2010
under roof area	40,489 m <sup>2</sup>	41,113 m <sup>2</sup>	52,520 m <sup>2</sup>	52,520 m <sup>2</sup>	52,520 m <sup>2</sup>	55,785 m <sup>2</sup>
sealed ground	49,639 m <sup>2</sup>	49,639 m <sup>2</sup>	52,930 m <sup>2</sup>	52,930 m <sup>2</sup>	52,930 m <sup>2</sup>	55,815 m <sup>2</sup>
unsealed ground	49,474 m <sup>2</sup>	48,850 m <sup>2</sup>	59,801 m <sup>2</sup>	59,801 m <sup>2</sup>	59,801 m <sup>2</sup>	59,801 m <sup>2</sup>
<b>Total</b>	<b>139,602 m<sup>2</sup></b>	<b>139,602 m<sup>2</sup></b>	<b>165,251 m<sup>2</sup></b>	<b>165,251 m<sup>2</sup></b>	<b>165,251 m<sup>2</sup></b>	<b>171,401 m<sup>2</sup></b>

### 5.1.3.5 Noise

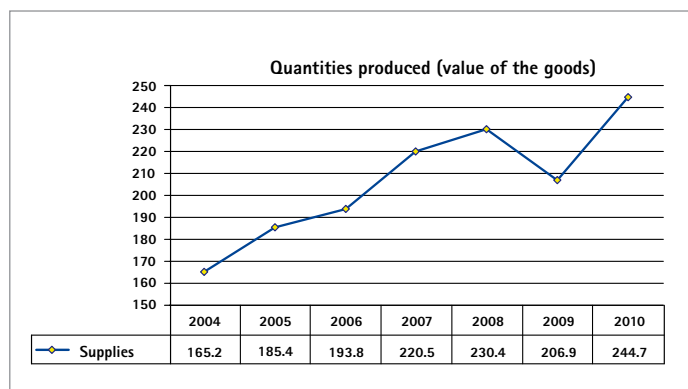
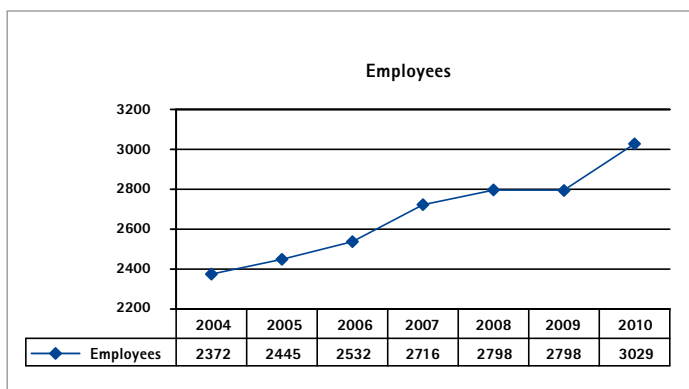
With the closure of the forge in 2005, acoustic emission levels fell below Federal Emission Control Law. Delivery and despatch of goods takes place during normal working hours only, to maintain the effect of traffic noise in the

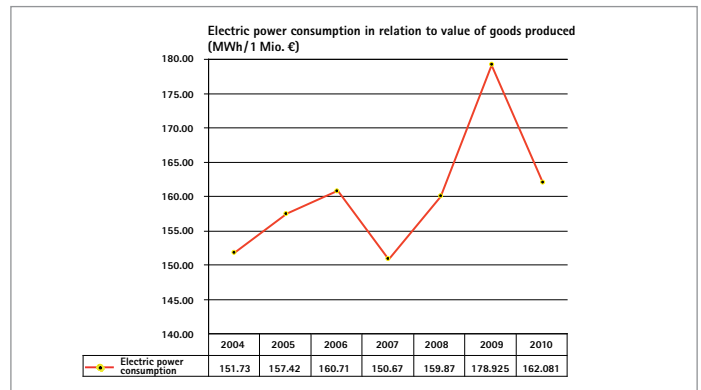
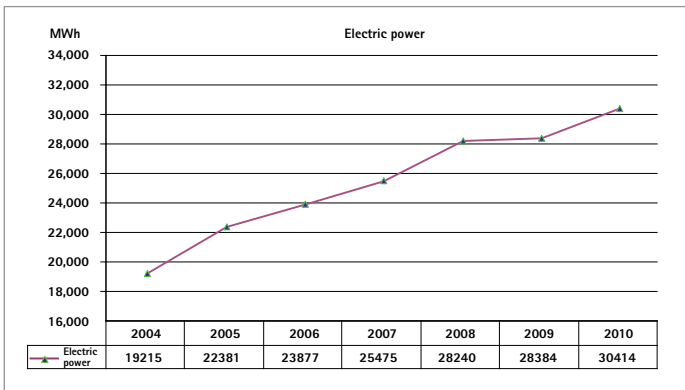
neighbourhood at an absolute minimum level. The building of a new logistics centre and the associated improvement in logistics flow has relieved traffic problems on the factory premises significantly.

### 5.1.4 Data update on statement of relations

- Employees
- Quantities produced

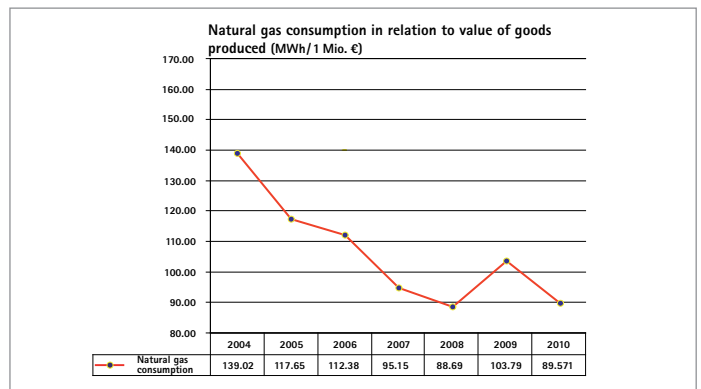
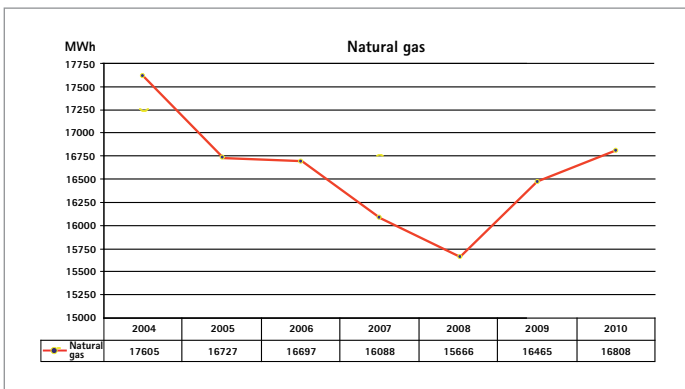
The increase in the number of employees and in quantities produced related to the 1996/97 business year = 100 makes the continuous increase of power and water consumption understandable.





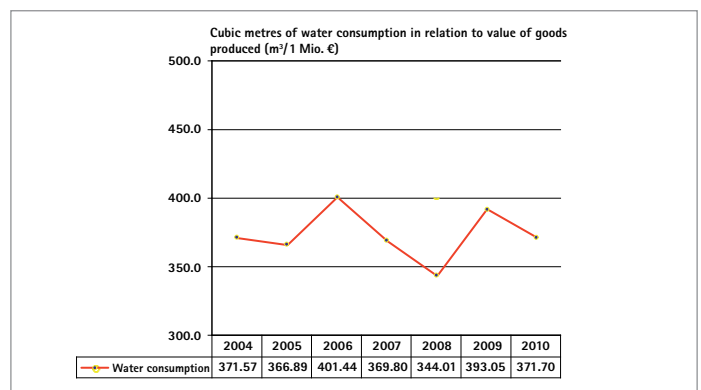
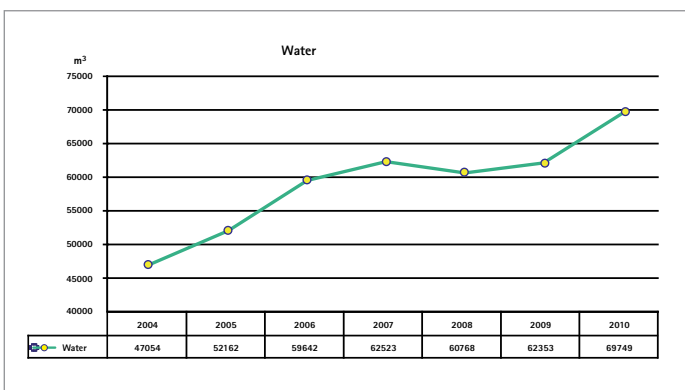
The extension of buildings and equipment as well as an increase in the number of employees in the years 2003 to 2008 led to a

relative increase in electric power consumption due to a reduction in capacity utilization in 2009.



Natural gas is practically only used for heating on the site so that annual consumption depends on weather conditions. We are doing our best to minimise heating energy requirements by steadily improving the insulation of the buildings. The adoption

of such measures allowed us to reduce the level of natural gas consumption in relation to the value of goods produced during the period from 2003 to 2010, despite an increase in the number of buildings.



Numerous projects to reduce the level of water consumption were started in 2007. This stabilized the absolute water consumption level despite an increase in the number of employees.

The increased absolute water consumption in 2010 corresponded to the increase in production as shown in the water consumption to goods produced graphic.

### 5.1.5 Core Indicators 2009 and 2010

The indicators, requested in EMAS III, Appendix IV were added to the input-output balance. The total annual output in 2010 amounted to 370.565 Mill. Euro (total gross value).

Energy Efficiency	2009	2010
Total direct energy consumption (MWh)	45,244	47,424
Total direct energy consumption (MWh) / total output (Mill. Euro)	140.11	127.98
Total consumption of renewable energy (MWh)	6,812	7,299
Total consumption of renewable energy (MWh) / total output (Mill. Euro)	21.10	19.70
Proportion of renewable energy per annum from total energy consumption	15.1 %	15.4 %

Material Efficiency	2009	2010
Steel (t) / total output (Mill. €)	2.385	2.124
Cobalt-chromium steel (t) / total output (Mill. €)	0.093	0.089
Aluminium (t) / total output (Mill. €)	1.319	1.471
Titanium (t) / total output (Mill. €)	0.170	0.169
Brass (t) / total output (Mill. €)	0.015	0.011
Halogen-free solvents for cleaning systems (t) / total output (Mill. €)	0.015	0.018
Premium gasoline (t) / total output (Mill. €)	0.025	0.021
Diesel fuel (t) / total output (Mill. €)	0.326	0.275
Cooling lubricants, water-based (t) / total output (Mill. €)	0.101	0.105
Oils and fats (t) / total output (Mill. €)	0.215	0,211
Detergents, water-based (t) / total output (Mill. €)	0.086	0.082

The total amounts of listed raw materials and supplies are shown in a table in chapter 5.1.1.1

Water	2009	2010
Total annual water consumption (m <sup>3</sup> )	62,353	69,749
Total annual water consumption (m <sup>3</sup> ) / total output (Mill.)	193.10	188.22

Waste	2009	2010
Total annual amount of waste (t)	2,261	2,515
Total annual amount of waste (t) / total output (Mill. €)	7.002	6.787
Total annual amount of dangerous waste (t)	648	711
Total annual amount of dangerous waste (t) / total output (Mill. €)	2.007	1.919
<b>Substantial amounts of dangerous waste</b>		
Cooling lubricant waste, water-based (t) / total output (Mill. €)	0.988	1.012
Electroplating and wastewater treatment residues (t) / total output (Mill. €)	0.259	0.247
Grinding debris (t) / total output (Mill. €)	0.351	0.324
Oil separator content (t) / total output (Mill. €)	0.043	0.034
Waste oil (t) / total output (Mill. €)	0.050	0.047
Oil contaminated operating material (t) / total output (Mill. €)	0.068	0.063
Wastewater from small electroplating units (t) / total output (Mill. €)	0.177	0.143
<b>Substantial amounts of non-dangerous waste</b>		
Paper, cardboard (t) / total output (Mill. €)	0.902	0.744
Metal scrap (t) / total output (Mill. €)	2.513	2.290
Electronic scrap (t) / total output (Mill. €)	0.019	0.013
Scrap lumber (t) / total output (Mill. €)	0.322	0.393
Glass scrap (t) / total output (Mill. €)	0.012	0.016
Residual waste (t) / total output (Mill. €)	0.432	0.298
Recyclable / packing material (t) / total output (Mill. €)	0.476	0.556
Grit from matting systems (t) / total output (Mill. €)	0.218	0.288
Organic waste / garden waste (t) / total output (Mill. €)	0.041	0.123

The absolute values of listed dangerous and non-dangerous waste are shown in a table in chapter 5.1.3.1

Biological diversity	2009	2010
Land consumption (under roof and sealed area) (m <sup>2</sup> )	105,450	111,600
Land consumption (under roof and sealed area) (m <sup>2</sup> ) / total output (Mill. €)	326.56	301.16

Emissions	2009	2010
Total emission of greenhouse gases (t of CO <sub>2</sub> -equivalent)	3,432	3,871
Total emission of greenhouse gases (t of CO <sub>2</sub> -equivalent) / total output (Mill. €)	10.628	10.446
Total emission of SO <sub>2</sub> (kg)	111.7	81.5
Total emission of SO <sub>2</sub> (kg) / total output (Mill. €)	0.346	0.220
Total emission of NO <sub>x</sub> (kg)	5,394	5,473
Total emission of NO <sub>x</sub> (kg) / total output (Mill. €)	16.705	14.769
Total emission of PM (kg)	4,718	4,718
Total emission of PM (kg) / total output (Mill. €)	14.612	12.732

## 5.2 Indirect environmental aspects

The important indirect environmental effects are product-related. These are summarized in the list below.

Product phase	Indirect effect on the environment	Options for exerting influence
Function and design	Function and design have critical effects on the use of raw materials, supplies and related manufacturing processes.	Developers are advised to use environmentally friendly materials (AIM handbook).
Development and recycling / disposal	The materials selected, construction and joining technology will define the later disassembling of the product.	In the product-development, we concentrate on the development of appliances which are easily recycled and disassembled.
Packing	Products are in non-returnable packaging and go into recycling.	The company's influence on recycling processes is low. Reusable packaging is not suitable because of too small quantities. Recycling is carried out by a dual system in which we participate.
Transport	The transport of goods leads to an increase in transport volume and subsequent environmental problems caused by emissions and noise.	Delivery to hospitals is carried out "just-in-time" through freight forwarder / parcel service. This is the only method available to deliver on schedule and to handle logistics for the whole of Europe from two central warehouses. Arguments: high stock availability, dependable delivery service, customer requires no stock keeping because of fast delivery.
Usage / Application	Our products have – because of their high quality – a very long life-span. Appliances can be returned at the end of their life cycle.	Customers are informed about maintenance and the return of goods to ATS (Aesculap Technical Services).

## 6. Environmental targets and programs

Our environmental targets and programs are based on measures which were taken following the results of internal environmental audits and are implemented by department managers.

The Environmental, Occupational Health and Safety Committee monitors and reviews their rigorous implementation. The personnel and tangible means required for the implementation of the targets and programs have already been earmarked by the board of management.

The chart below illustrates the degree of realization of environmental targets and environmental programs in 2009 and 2010. It was possible to carry out all measures successfully and on schedule, apart from the improvement in thermal insulation by insulating the roofs of building 4 and building 14 which was postponed because of changes in location planning relating to investment in new buildings. The replacement of standard heat-

ing pumps by demand-controlled pumps in one or two buildings was also postponed.

As a follow-up to the set targets to reduce water consumption, a project planned to be implemented within a few years, was started in 2008. Replacing the traditional water taps with infrared electronic-controlled valves, test results showed a reduction in water consumption of 25% per stream. These measures continued in 2010.

To save energy, compressors were fitted with a waste heat recovery system in the years 2009 and 2010.

In order to reduce heat losses inside the buildings in use, ongoing projects which had already been planned in 2008 went ahead. More old windows were replaced by modern heat-insulated windows.

### 6.1 Environmental Targets and Programs realized in 2009 – 2010

Target	Measures / comments	Key data	
Energy saving; Saving of electric energy	Replacement of standard heating pumps by demand-controlled pumps in all areas during maintenance.	Saving of up to 50 % of the necessary electric energy.	✓
Energy saving; Cost reduction heating energy (natural gas)	Installation of a hydraulic calibration in the buildings.		✓
Energy saving; Saving of electric energy	Replacement of standard heating pumps with demand-controlled pumps in building 20.	Saving of 2,205 kWh p. a.	✓
Energy saving; Cost reduction heating energy (natural gas)	Waste heat recovery compressors in building 19.		✓
Energy saving; Cost reduction heating energy (natural gas)	Waste heat recovery in ventilation system in building 20.	Efficiency 90 %.	✓
Energy saving; Saving of electric energy	Final closure of outside floor heating systems.	A saving of 110.7 kW per operating hour; Approximately 1,000 operating hours per year.	✓
Energy saving; Cost reduction heating energy (natural gas)	Replacement of old windows by modern high insulated windows. Replacement of windows in building 2, first floor and building 24, first floor, south front.	Investment 85,000 EUR	✓

Target	Measures / comments	Key data	
Energy saving; Cost reduction heating energy (natural gas)	Waste heat recovery compressors in building 3.	Energy saving can not be calculated at the moment.	✓
Saving water	Installation of contact-free water taps on washbasins as part of corrective maintenance. Test results showed 25% less water consumption. Exchange of 10 taps in 2010. 18 taps were exchanged in 2008 and 13 taps in 2009.	Exchange of 10 water taps in the calendar year.	✓
Energy saving; Cost reduction heating energy (natural gas)	Improvement of thermal insulation by insulating the roofs of building 4 and building 14. The improvement in thermal insulation by insulating the roofs of building 4 was postponed because of changes in location planning relating to investment in new buildings. Insulation of the roof of building 14 was cancelled because the attic will not be used anymore and therefore not heated.	Investment 75,000 €	✗
Energy saving; Saving of electric energy	Replacement of 5 Liter sink heaters by flow heaters during corrective maintenance. 10 sink heaters were replaced in 2008 and 12 sink heaters in 2009 and 14 sink heaters in 2010.	Exchange of 5 sink heaters in the calendar year.	✓
Energy saving; Cost reduction heating energy (natural gas)	Weak point analysis of the buildings through calculation of energy balance (building energy passport) by means of a software to be purchased. The software was purchased but not used so far.		-
Energy saving; Saving of electric energy	The replacement of standard heating pumps by demand-controlled pumps in one or two buildings. See targets 2011.	Saving of up to 50 % of the necessary electric energy.	✗

- ✓ Measures implemented
- ✗ Measures not implemented

## 6.2 Current environmental targets and programs 2011

Target	Measure	Responsible	Deadline	Key data
Saving water	Installation of contact-free water taps on washbasins as part of corrective maintenance. Test results showed 25% less water consumption.	Central Technical Services	12/11	Exchange of 10 taps in the calendar year.
Energy saving; Saving of electric energy	Replacement of 5 Liter sink heaters by flow heaters during corrective maintenance.	Central Technical Services	12/11	Exchange of 5 sink heaters in the calendar year.
Energy saving; Cost reduction heating energy (natural gas)	Replacement of old windows by modern high insulated windows. Replacement of windows in building 2, first basement level and building 12, first floor.	Central Technical Services	12/11	Investment 75,000 €
Energy saving; Cost reduction heating energy (natural gas)	Improvement of thermal insulation by insulating the roof of building 12.	Central Technical Services	12/11	Investment 146,000 €
Energy saving; Cost reduction heating energy (natural gas)	Updating the heating system in building 1 and building 2 to state-of-the-art technology.	Central Technical Services	12/11	

Responsibility for the implementation of the environmental program lies with the staff mentioned earlier. The allocation of the necessary funding and tangible means is provided by the annual budget and capital investment planning.

In the 2010 business year, a total of 296,713 € was invested in environmentally-relevant installations.

## 7. Formal details

The environmental report documents our environmentally-orientated actions. It is a summary of the situation. Not only do we want to react to critical environmental problems, to statutory requirements or public criticism, but we also want to take preventative action as an industrial manufacturing company with

responsibility for the environment and for the wellbeing of the enterprise. For that reason, we present the hard facts of the case clearly and candidly as a confidence-building measure. In the environmental report, we wish to inform our workforce as well as the general public about our environmental protection measures.

## Contact address

Aesculap advocates an open dialogue. For further information please contact the head of environmental protection and safety:

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## 8. Statement by the assigned environmental expert on verification and validation activities.

The signatory, Dr. Ralf Rieken, EMAS-environmental expert, Reg.-No DE-V-0034, accredited or certified to the fields of manufacture of metal products, medical instruments and miscellaneous goods (NACE-code (2008) 25 and 32,5) confirms having examined whether the site, as stated in the updated environmental report (Reg. No DE-169-00003), fulfills all requirements of decree (EU) No 1221/2009 of the European Parliament and its Council of 25 November 2009 regarding voluntary participation in a system for environmental management and environmental company audit (EMAS).

Signing this declaration confirms that verification and validation were carried out in full compliance with (EU) No

1221/2009. The result of this verification and validation confirms that no documents are available to state any non-compliance of environmental regulations. Data and information in the updated environmental report of the organisation show a dependable, credible and truthful picture of all activities of Aesculap AG at the location Tuttlingen within the area quoted in the environmental report.

This declaration does not equate with an EMAS-registration. EMAS registration can only be carried out by a competent authority according to decree (EU) No 1221/2009.

It is not permitted to use this declaration as an independent base for public information.

Tuttlingen 26.07.2011



Dr. Ralf Rieken  
Environmental expert (Accreditation no. DE-V-0034)

## Next environmental report

The next consolidated environmental report will be published not later than June 2014. In the years 2012 and 2013 updated environmental reports will be presented.

