



ENVIRONMENTAL REPORT 2004/2005



BERTELSMANN

ARVATO AT A GLANCE

2004

Company figures

Sales (mil. €)	3,756
Operating EBIT (mil. €)	310
Employees	33,813

Environmental figures

Input

Raw materials (tons)	1,491,975
Auxiliary materials (tons)	397,560
Operating materials (tons)	13,334
Fresh water (m ³)	2,749,261
Energy sources (MWh)	1,440,941

Output

Products (number in mil.)	14,765
Waste (tons)	272,206
• Waste for recycling	223,452
• Waste for disposal	48,754
• Share of waste that requires special monitoring among both types	1,112
Sewage water (m ³)	2,082,739
Emissions (tons)	
• Carbon dioxide, fossil	701,644
• VOC	1,801
• Sulfur dioxide	964
• Nitrogen oxides	957
• Carbon monoxide	443
• Dust / particles	119

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NEW HORIZONS

Dear Readers,

The number of publicly-listed companies that publish an environmental or sustainability report has risen sharply over the past few years, especially in the Western industrial countries. Participants in the international capital markets are increasingly interested in the risks that companies face as a result of their impact on nature and the environment. But they also are interested in the opportunities that can arise from future-oriented activities. Environmental protection is no longer regarded primarily as a cost factor. With the right approach, environmentally sustainable action often does not raise costs but instead may actually lower them. In fact, when a company does face additional costs, these are increasingly viewed as investments in the company's competitiveness and future success in the market.

Naturally, the long-term interrelated effects of business success, environmentally sustainable management and social responsibility applies not only to listed companies, but to all businesses – including arvato. This is why we have paid increasing attention to environmental and natural resource protection over the past few years. We launched the effort at the end of 2003 when we introduced mandatory group-wide environmental guidelines. True to our principle of decentralized management, we transferred the responsibility for this matter to the managers of our local subsidiaries, 250 at the time, and appointed a central environmental officer as an adviser and a coordinator.

With this environmental report, we are venturing down a new path and are showing for the first time how the management and the employees of arvato AG address environmental issues – the

starting point, the successes thus far and the plan for group-wide environmental protection in the future. For the first time, we have collected group-wide environmental data and compiled this information on an international environmental balance sheet, thus creating a basis for future comparisons.

This report is also intended to inspire additional ideas internally and intensify our existing activities. This process would be inconceivable without a constructive dialogue with our stakeholders, above all our customers, suppliers and employees. As members of the Executive Board at arvato AG, we have made a personal commitment to improve environmental protection – and our efforts have already paid off. For the company's commitment to sustainable forest management, arvato received the Global 100 Eco-Tech Award at the Expo 2005 that was held in Aichi, Japan, in September 2005.

We would like to thank all of our employees whose hard work and dedication made this comprehensive overview of our impact on the environment possible. We also would like to thank IKEA, SCA, WWF and the FSC who offered constructive and critical support through their statements.

We realize that we have only just begun a long journey and still have a long way to go. Nonetheless, we are looking forward to presenting the next milestone report to you in two years.

“Invitation to constructive



Andreas Henrichs
Central Environmental
Officer of arvato AG

Executive Board of arvato AG:

Dr. Hans-Joachim Herzog

Dr. Hans-Peter Hülskötter

Günter Wilmsmeier

Rolf Buch

Hartmut Ostrowski
Chairman of the Board

dialogue”



ARVATO: THE GLOBAL MEDIA SERVICE PROVIDER

arvato is a member of Bertelsmann AG. All over the world, Bertelsmann occupies leading positions in its core markets – television, books, music, magazines, media clubs, and media services. The Bertelsmann group includes market leaders such as RTL Group, the No. 1 television and radio business in Europe, and Random House, the world's largest consumer book publisher. Creativity and brands are also trademarks of Europe's biggest magazine publisher Gruner + Jahr and the BMG music business. The media services offered by arvato include distribution facilities, service centers and customer loyalty systems, as well as state-of-the-art printers, storage media production houses and comprehensive IT services. Direct Group bundles book and music clubs.

Dynamic growth through service diversity

Media and communications require service providers. From classic forms of printed media to modern offerings like service centers, financial clearing or mobile services. These are the types of services provided by arvato AG. With sales of € 3.8 billion and 34,000 employees working at approximately 250 subsidiaries in 28 countries*, we are among the largest internationally networked media service providers.

*All figures relate to 2004.

The activities of arvato can be categorized in six functional areas:

Content creation: With our editorial staffs and agencies, we help our customers formulate content that speaks to their target groups and present it in appealing design packages.

Data management: Data form the foundation of successful businesses today – when they are not only collected, but also systematically managed, processed and linked to relevant information. arvato accomplishes this job with media-neutral databases, our own innovative content and knowledge management systems and the latest data-processing technologies.

Duplication: Information needs media if it is to reach its recipients, be it classical printed material or digital data carriers like CD/DVD and the Internet. We offer a comprehensive range of solutions – optimized for time and highly individual.

Further processing: The printing press is far from the last step for printed media. The quality and profitability of printed material are determined in large part by the further processing. Here, arvato does it all – from finishing and binding to insertion and attaching to personalized shipping.





Logistics: So that our customers can focus on their core business, we take care of the most complicated logistical responsibilities with our own IT solutions designed to meet individual needs. Our services include order management, warehousing, shipping and transport as well as returns management and repair services.

Customer care: Customer care is a critical factor in the development of customer loyalty and an important way to distinguish a company from its competitors. In customer relationship management as well, we offer reliable solutions: operation of service centers, management of customer data, customer information systems and customer retention systems, and financial services like factoring and online payment systems, to name just a few examples.

Five divisions to serve the customer

We have organized our services into five divisions:

arvato direct services offers effective solutions that cover all aspects of customer communications: from the systematic acquisition and use of addresses and the outsourcing of customer contact work to service centers, the development and implementation of customer retention programs and the handling of payment transactions. We support our clients' clients in more than 20 languages and with all means of communications. We employ more than 11,000 people at over 30 sites around the world.

arvato logistics services is a global provider of supply chain solutions with about 6,200 employees. The jobs we perform extend well beyond the delivery of products and their coordinated and managed shipment to the customer. Consulting, procurement and even production are part of our services as well, just like order management, warehousing, financial services, returns processing and repair services. Our customers include well-known companies from such sectors as banking, insurance, telecommunications, IT, media, automobile and health care.

arvato direct services and arvato logistics services appear outside Germany as arvato services.

The business area of **arvato print** includes 17 printing companies with about 11,000 employees in seven countries. We offer a complete range of services: from consultation and conception to prepress operations (image processing, layout, the preparation of printing plates), the actual printing (offset, rotogravure and digital printing), finishing (bindery, personalization, addressing, dispatch, etc.) and supplementary services (storage, distribution etc.).

arvato storage media, a company with more than 4,000 employees, is the world's market leader in the distribution of all sorts of digital content and one of the leading manufacturers of CDs, CD-ROMs and DVDs. Of course, we offer a complete range of state-of-the-art services – from pre-mastering and tailor-made print and packaging products to delivery and online marketing.

arvato systems has 25 years of experience as the IT service provider of Bertelsmann AG and uses its large computer center to offer external customers comprehensive, "round-the-clock" service worldwide. The value chain extends from consultation, conception, development and implementation to the operation of complex IT systems. This also includes arvato mobile (a full-service provider for leading network operators, media companies and Internet portals) and empolis (innovative content management products).

In all of the services described above, we maintain a leading position in our markets – this is the result of a philosophy that always views the success of the customer as the basis for our actions. It is our employees who make our achievements possible. We know that the quality of products and services rises and falls with the skills and professionalism of the people who perform the work. This is why our management places special emphasis on constructive leadership and support – for the good of the employees and the company.

ORIENTATION THROUGH FUNDAMENTAL VALUES AND ENVIRONMENTAL GUIDELINES

Just like every other aspect of our company, environmental protection is covered by rules that are designed to guide the actions of our employees.

The core of these guidelines is formed by the fundamental values of Bertelsmann AG. We call these values the "essentials." They address topics like partnership, identification and motivation or personnel development as well as ethical principles and our corporate social responsibility. They accentuate entrepreneurial spirit, decentralization and cooperation.

In the area of environmental protection, we developed a special conceptional framework. At the end of 2003, the management of arvato established environmental guidelines that apply throughout arvato AG. This laid the foundation for systematic, company-wide environmental reporting.

Environmental guidelines for arvato AG and its member companies

1. Responsibility

A key part of the corporate philosophy at arvato AG is that each employee feels responsible for the company in terms of both environmental protection and striving towards economic success. One important condition for this is continuous training of our workforce who we actively encourage and develop. We oblige ourselves and our employees to act in an environment-oriented manner without merely restricting ourselves to adhering to environmental laws and guidelines. Part of this responsibility also includes the introduction and maintenance of an effective environmental management system in all relevant corporate areas.

2. Acting for the future

arvato AG observes the social standards and values as well as the personality of each individual employee. We keep our employees and interested members of the public informed about the environmental effects of our activities, down to individual plants. We attach great importance to the sustained development of our business. This includes analysing and evaluating all environmental aspects prior to launching new products and processes which in turn enables us to offer our customers innovative technologies and tailor-made solutions in all our divisions without neglecting our high requirements as regards protection of the environment.



3. Together with customers and suppliers

What applies for our employees within the framework of internal processes is also transferred to our relationships with customers and suppliers. We work closely with them to develop solutions to problems which are equally economically successful and environmentally friendly. The environmental benchmarks applied in our company are also applicable when selecting contract partners and suppliers. Environmental aspects are increasingly gaining in importance when it comes to advising our customers.

4. Precautionary measures

It is the declared objective of our company management to optimise the consumption of raw materials, energy and water ensuing from our activities and to minimise pollution in the form of emissions, sewage water and waste. Executive management at arvato AG and all of its associated companies also undertake every effort to prevent emissions that result from on-site accidents. If however such an event should occur, our employees are well prepared to deal with it and the appropriate rules of conduct ensure minimum effect on the environment.

5. Transparency and dialogue

Cooperation with the authorities and community groups is something we do on a day-to-day basis at arvato AG and at all our companies. Both now and in the future, we will continue to design our working methods in a transparent manner and

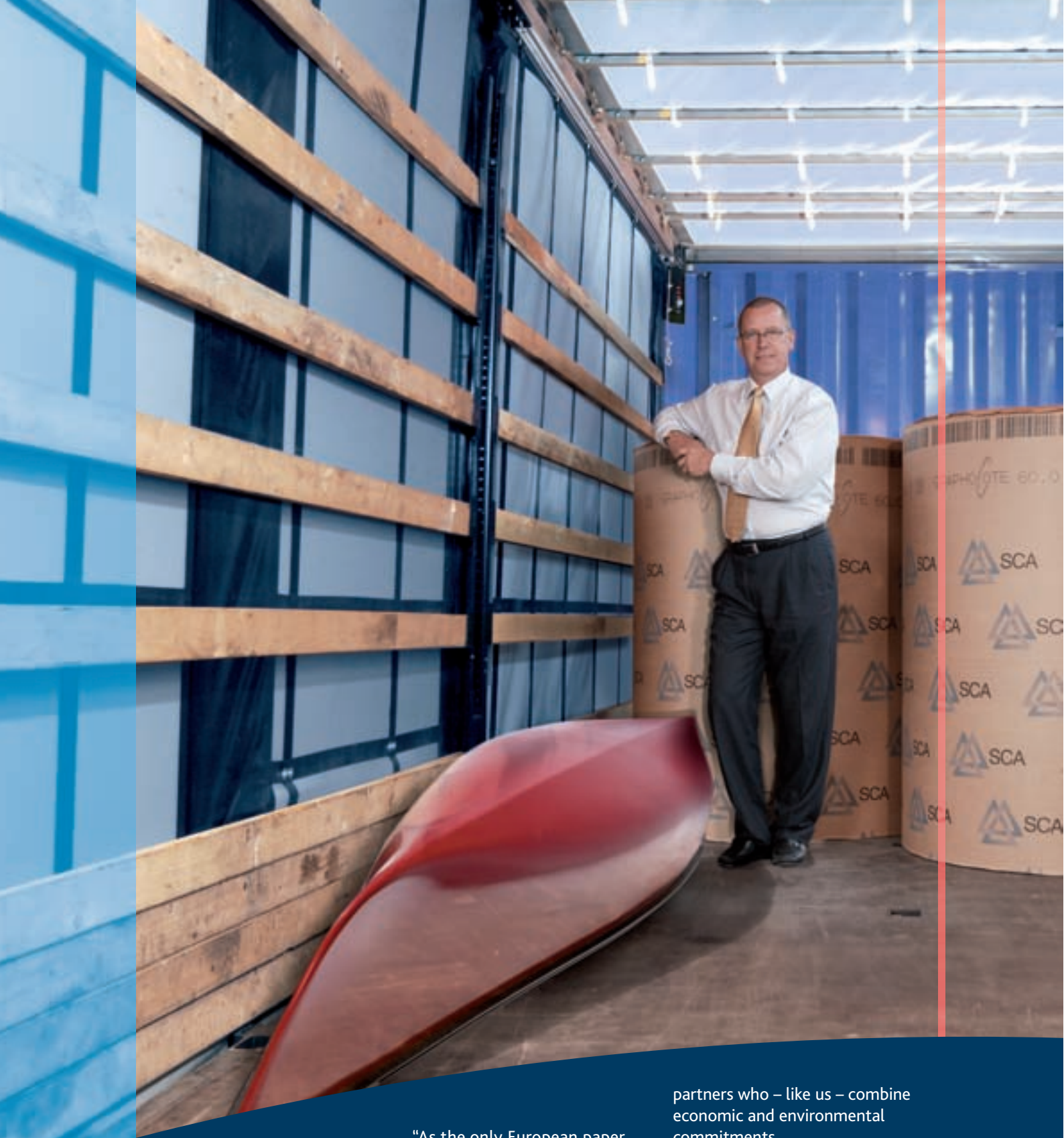
discuss openly with our partners. This willingness to maintain dialogue is a key component of our corporate philosophy. Furthermore, we offer each of our member companies the opportunity to have their environmental activities and performance surveyed within the framework of a neutral certification process.

6. Commitment and permanence

These guidelines are binding for each employee at both arvato AG and its member companies. If parts of these guidelines should prove insufficient or inapplicable in practice, they will be reworked as required by those responsible within the framework of regular revision.

Conclusion

The activities performed by arvato AG and its member companies will continue to be characterized by the objective of constantly improving environmental protection. Protection of our environment and natural resource management will also continue to play a significant role in discussions and negotiations with our customers and suppliers. We reach out to our partners to ensure their support for environmental protection. Our efforts to protect resources and the basic necessities of life extend far beyond statutory requirements. With this, we are not only complying with our own idea of sustained development. We are also working toward the greater goal of preserving the earth for future generations and passing on to them a positive place in which to live.



"As the only European paper supplier that covers the majority of its needs from its own forests, we view environmental protection and the sustainable use of resources as a particularly important responsibility. This is why we cooperate with strong

partners who – like us – combine economic and environmental commitments.

Therefore we strive to ensure that our products meet the highest environmental standards. By cultivating our vast forest regions in line with the demanding FSC standards, we can offer

"Products that meet the highest

TOP PERFORMANCE THROUGH DYNAMIC CHANGE

arvato has undergone fundamental changes over the past 10 years: Our company has its roots in a group of printing companies that can look back on several decades of success in the market. We have continuously expanded from this core. Over the years, we have evolved into a comprehensive media service company. Our internationalization is far advanced: In 2004 we operated in 28 countries and nearly 60 percent of our sales were generated outside Germany. We embraced the digitization of the media world at an early stage and have pioneered the dovetailing of the so-called old and new economies. We recognize that our existence depends in particular on healthy profits, a goal that we have consistently achieved. We have made great strides in boosting our bottom line over the past few years.

A decentralized organization as a major contributor to our success

Customer orientation and flexibility rank among our particular strengths. They can thrive only in a constructive corporate environment that fosters entrepreneurial initiative. This is why we regard our decentralized organizational structure as the key to our success. It offers all companies a high level of flexibility, responsiveness and efficiency.

Building on our recent international growth, competitive strength and market expansion, we are now focused on making similar strides in the area of environmental protection. This is an issue that has continually gained importance in our company's management. The introduction of group-

wide environmental guidelines at the end of 2003 provided the foundation from which this issue complex will be developed in all group companies.

The principle of individual responsibility

Our first group-wide survey of environmental data at the end of 2004/beginning of 2005 showed that our 250 subsidiaries approach the task of environmental protection from different starting points. Our companies are making progress in the implementation of our environmental guidelines. Initial success stories have been reported, and we will continue to launch new initiatives and see progress in all areas.

We will learn from one another as we begin integrating the existing approaches and advancing the entire group through an intensive exchange of experiences, cooperation and coordination. Here, too, we will make use of the principle of decentralization. Based on our environmental guidelines, we want to achieve target agreements at the company level, promote activities and coordinate different measures. The necessary human resources are being created as well. An important first step was taken with the appointment of a central environmental officer who acts as a consultant and coordinator for the arvato companies.

We have charted the course for group-wide environmental protection. This first environmental report will serve as another important step within our group and provide support for the development of a self-sustaining program.

certified paper products that are also bleached without the use of chlorine.

In addition, our ships and trucks comply with the highest emission standards and therefore substantially reduce environmental damage."



Rolf Johannesson
Senior Vice President Marketing
SCA Graphic Sundsvall AB

environmental standards"



MULTI-FACETED IMPULSES

We consider our operating philosophy of decentralization to be critical to our success. We are keenly aware of the benefits that broad entrepreneurial freedom can produce and impose as few restraints as possible on the activities of our approximately 250 group companies.

arvato's environmental guidelines are also inspired by this attitude. They form the foundation for our effort to continuously raise the standard of environmental protection within the group. But these guidelines are not linked to any centrally mandated directives. Each company head is responsible for implementing the recommendations outlined in these guidelines at his discretion – in accordance with the principle of decentralization that our executives value so much.

We support our managers in the process. Our environmental officer offers suggestions, promotes a flow of information and coordinates activities. He is assisted by a team of employees who act as contacts and representatives at each of our companies.

Agreement with the WWF

arvato consciously strives to address the environmental demands made by stakeholders and promotes an ongoing dialogue with such groups as non-governmental organizations (NGOs). In 2005, we reached an official agreement with the WWF Wood Group – another milestone along our path to achieving company-wide environmental protection. The companies are participating in this voluntary initiative through individual agreements with the World Wide Fund For Nature (WWF). The group's partner companies respect and promote forest and wood certification based on the principles and criteria of a demanding system that fulfills the requirements of the WWF, including that of the FSC (Forest Stewardship Council). The aim of the WWF Wood Group is to rapidly expand the percentage of wood products bearing

a reliable third-party certificate and reach the level of 100 percent as quickly as possible. This issue is particularly important to us as a major paper-processing company. The agreement includes concrete goals and implementation programs that start with consciousness-raising efforts and training for employees.

In addition, we communicate internally with employees at all levels of the company and externally with suppliers, customers and a wide range of (environmental) organizations about this worthwhile cause and assume responsibility in an official capacity by doing such things as serving on the board of trustees of the WWF.

Employee communications and training

We recognize that as a company, the best environmental intentions will become reality only if they are supported by employees. Therefore, we ensure that our employees around the world receive training and that the issue has a platform in our internal communications – be it on the Intranet or in the employee magazine. In keeping with this philosophy, our environmental report will play a major role in our internal communication activities, too.

Each part of the puzzle contributes to a new attitude, to the introduction of programs and to successes that will show tangible results.

Our path to company-wide environmental protection:

- Environmental guidelines
- Responsibility of local managers
- Support from an environmental officer
- Ongoing dialogue with stakeholders
- Agreement with the WWF Wood Group
- Internal communications and employee training

ENCOURAGING SUCCESSES

For arvato, the initial initiatives and successes in the area of environmental protection are incentives to go beyond requirements. In this chapter, we will tell you about a number of these success stories:

Awareness of sustainable forestry

In addition to MOHN Media, our printing plant **GGP Media** in Pößneck, Thuringia, Germany, has obtained an FSC license. In 2004, the company underwent the demanding FSC certification process. Since 2005, GGP Media has been able to manufacture products that bear the FSC seal, which guarantees the use of wood from sustainable forestry.



Sven Tiffert, Head of Purchasing at GGP Media, promotes the use of FSC certified paper.

"We strive to continually increase the share of FSC certified paper in our production," says Sven Tiffert, Head of Purchasing Department at GGP Media. "We want to achieve this by actively consulting with our customers on their choice of paper." Printing products that bear the protected FSC label are not just high-quality products. They are also a symbol of environmental protection in practice – for both the printing plant and its customers.

Offset Paperback, Award-Winning Workplace

Offset Paperback Manufacturers Inc. (OPM), an American printer in the arvato group and one of the leading manufacturers of paperback books in the United States, has received a very gratifying distinction: In March 2005, the Dallas, Pennsylvania-based company won a "Best Workplace in America Award." The awards are given out yearly by the Printing Industries of America (PIA) and the Graphic Arts Technical Foundation (GATF). In 2005, the foundation bestowed its award on 48 print and graphic arts companies of the U.S. and Canada.



Michael J. Gallagher, CEO Offset Paperback Manufacturers

Michael J. Gallagher, President and CEO of OPM, said: "We are proud of this distinction because it recognizes our management practice, work environment, options for continued training and education and our occupational health and safety programs among other things." The award is presented to companies that acknowledge that a company's profitability is largely in the hands of its employees and whose actions are consistent with this insight. Gallagher: "It remains important that we continue to offer and develop a workplace environment that focuses on the safety, health and training of our 800 employees while also protecting the environment." As part of its mission to promote a healthy workplace, OPM and its premises became a totally smoke-free environment on July 1st of 2005. Years ago, the company became one of the first printers in the United States to create a functional Health Care Commission designed to educate and train its workforce on issues related to health and preventive medicine.



“At home I pay particular attention to saving resources – when using electricity or water or through avoiding waste. It is therefore only consequential to practice this in professional everyday life, too. At Printer Portuguesa we employees have the possibility of helping, personally and individually, to protect the environment. For this purpose

a working group was established especially, in which colleagues from all sectors meet on a regular basis to discuss issues concerning the protection of the environment and job safety and to highlight the potential for improvement. What the working group comes up with is then passed on to the whole company. Moreover, there are regular courses of instruction on

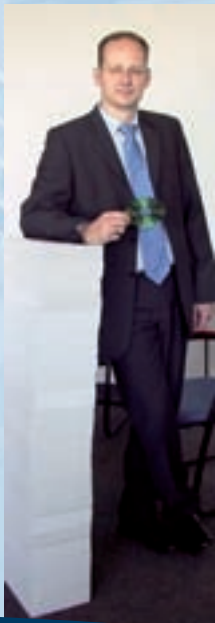
“Consequential commitment –

The paperless archive – really easy

Environmentally friendly operations have many different aspects. One of them is to ensure optimum efficiency in the use of raw materials or pre-products. Our division **arvato logistics services** offers a good example.

Every year, the automotive, bank/insurance, pharmaceutical and telecommunication product lines send 12 million consignments to customers – marketing material, technical literature, log books, medicine, cell phones as well as a host of different consumer goods. Previously, a paper copy of each delivery order and invoice was archived.

This has now changed. In July 2004, a team led by project manager Stefan Danckert started to prepare the paperless archiving of shipping orders. Initially, the team's task was to define the legal archiving requirements together with an auditing firm. In a second step, existing archive systems and standard software certified by the auditor which could be integrated seamlessly into arvato's existing IT landscape were checked for their applicability. The product of choice was "Easy Archive", developed by a leading provider on the market for archive software.



Following intensive preliminary work, the system was quickly installed. Stefan Danckert says: "Together with an external service provider, we were able to set up and operate the electronic archive solution in a matter of two months." In a first step, nearly 10 million

A dedicated team led by Stefan Danckert has managed to save 85 tons of paper a year.

existing documents from the past were scanned and digitized. This freed up warehouse space for pallets with a stacking height of 120 meters.

The desired environmental benefits will be reaped in the future. "Because the shipping orders and invoices that remain at arvato are no longer printed out on paper, we save up to 85 tons of paper a year!" Danckert says. In addition, the solution saves costs despite the transition process and the procurement costs. There are clear advantages for the company and the environment.

An ambitious certification program

Our Portuguese printing works **Printer Portuguesa**, founded in 1972, specializes in large-format sheet fed printing and the production of brochures and books. Mid 2005 its environmental management system obtained the international standard ISO 14001:1999 certification.

Managing Director Carlos Neves is in the final stages of his ambitious program of certification. The company had already fulfilled the standard ISO 9001:2000 in 2004. Neves said: "The present certification confirms that our printing works strictly fulfils environmental guidelines and we will continue to follow the path already pursued. For the year 2007 I am aspiring together with my team to obtain the certification of the health and safety management at the workplace according to the standard OHSAS 18001:1999. Preparations are already in progress."

The certifications the company has already obtained, together with the ones it plans to get in the future, underline Printer Portuguesa's commitment to quality in the production and to workplace safety and the environment. "We are thus not only complying with an ethical obligation, but also see therein an important argument for putting us one step above our competitors on the market."



*Carlos Neves, CEO
Printer Portuguesa*

environmental protection and job safety which give us all a feeling of satisfaction: Only those who are acquainted with risks, can make the right decision in an emergency."

Maria Ana Peixoto

Maria Ana Peixoto
Administrative Officer
at Printer Portuguesa

professional and private"

From waste to resource

The days when materials "left over" from production processes were considered to be trash are long gone. Systematic waste management can tap unexpected usage potential. Residue materials are thus turned into resources that can help reduce costs.

This is why the Central Purchasing Department in our German arvato logistics services division spearheaded a campaign to scrutinize our waste management activities in a number of subsidiaries in fiscal 2001. Aside from the German operations of **arvato logistics services** and **arvato direct services**, the initiative also involved other units from the Bertelsmann Group. The goal was to record and bundle volume flows for more than 80 types of waste, find suitable waste management partners on the market, cut costs and raise revenues.

In cooperation with a management consulting firm, we managed to concentrate the respective company-specific material volumes and the necessary services in a "waste pool." Ralf-Peter Severin, Head of Central Purchasing at arvato logistics services, says: "Thanks to the pooling of volumes in the context of a Germany-wide bidding process, we were able to optimize the marketing of our recyclable waste and achieve substantial cost savings for everybody involved."

Better marketing through bundling

As a first step, all internal and external waste management processes were analyzed. To this end, all receipts from fiscal 2001 were recorded and evaluated using comprehensive database

analyses. The subsequent auditing of company sites and operations yielded a precise picture of the waste disposal strategies in use as well as the mechanical technology in operation.

"We initially identified the optimal recycling strategies for each of the examined types of waste. The suitable machinery and container technology were then selected in line with the respective location volumes," says Uwe Diekmann, Vice President Facility Management at arvato logistics services. "Today, we are in a position to respond flexibly to changing customer requirements and adjust the waste disposal activities individually and cost-efficiently at any time." The success: A nearly complete recycling ratio was achieved in 2004.

Integrating environmental protection into operational planning

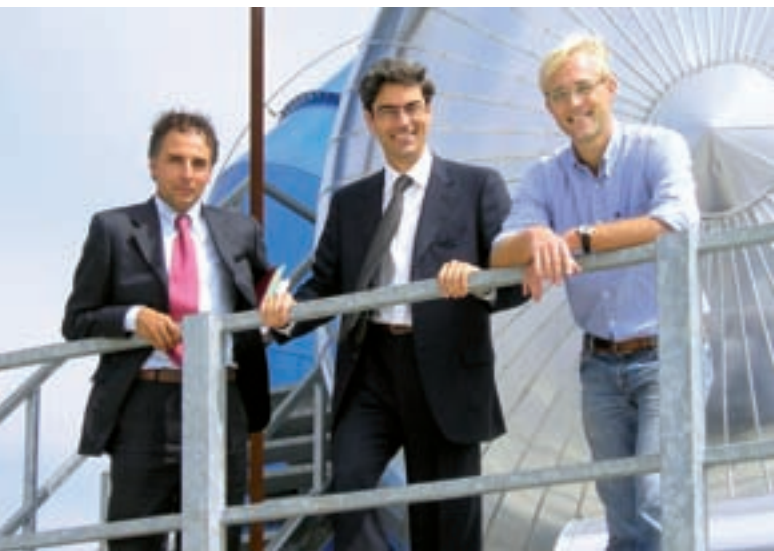
Over the past two years, our company has made its biggest investment so far: the state-of-the-art rotogravure printing facility **Eurogravure**. It was built in Treviglio, located between Milan and Bergamo in northern Italy, for a cost of just under € 120 million. Environmental protection played a major role even while the plant was being designed. Here are two examples:

Energy-efficient cogeneration

With the help of a state-of-the-art combined heat and power station, Eurogravure can supply its production facilities and buildings around it with the energy it efficiently produces on site. The power plant's electricity output exceeds the printing facility's requirements by about 30 percent. This makes it possible to feed the surplus into the public grid. Environmentally friendly natural gas is

Uwe Diekmann and his colleagues have achieved a nearly complete utilization of residues.

the primary source of energy. It is burned in two turbines. The gas emissions leave the turbine at a temperature of more than 500 degrees Celsius. This heat is used to generate steam and hot water. The hot water, in turn, is used to power an absorption refrigeration unit that meets a portion of the plant's cold water needs. We use two additional steam-operated refrigeration units to cover the increased cold water requirements during the summer months in Italy.



In charge of environmental protection at Eurogravure: Plant Director Marco Negri, Managing Director Mauro Cosani and Jörg Hofmann, Head of Energy Department (from left).

As a result, Eurogravure is successfully exploiting the positive usage potential of combined heat and cold generation. This ensures optimal use of the primary source of energy, natural gas. Less than 10 percent of the energy contained in the natural gas is released with the flue gases that have been cooled to 85 degrees Celsius. As a result, the emission levels are well below legal requirements.

Intelligent solvent and heat recovery

In rotogravure printing, the use of solvents remains unavoidable. They are drained from the rotary printing presses and initially trapped in activated charcoal filters. After being cleansed in the bed of activated charcoal, the air drawn from the presses is solvent-free – with the exception of traces of toluene in the ppm range – and is re-circulated to the rotary printing presses. From time to time, steam is used to release the solvents that have accumulated in the activated charcoal. To separate the mixture of toluene and steam in a gravity separator, the hot condensate must be cooled to room temperature. The heat exchangers installed for this purpose are complemented by a condenser, the heart of the heat-recovery facility. This has two positive benefits: First, it reduces the cold water volume required to cool the solvent-water mixture. Second, it generates free hot water. The excess hot water is used to cool the printing facility in the summer and to heat it in the winter. This means that we save the electricity and steam that are needed for climate control in traditional industrial facilities throughout the year. This investment allows us to drastically reduce the use of fossil fuels and make a significant contribution to environmental protection.

Aside from resource-efficient energy supplies and solvent and heat recovery, the plant uses other innovative solutions to cleanse process air and waste water. "The planning for a major printing facility enabled us to go far beyond legal requirements in the integration of environmental solutions into our operative processes," says Mauro Cosani, CEO of Eurogravure. "We made a conscious effort to take full advantage of this opportunity."



“The role of companies is changing. It is no longer enough for them to create jobs, generate revenues and pay taxes. Our customers and employees expect more from us. They expect that we actively embrace ecological and social issues as well. Frequently the question arises of

whether traditional business goals can be reconciled with a sense of responsibility to the environment and society. Or are they mutually exclusive?

We believe that the two can go hand in hand and that a sensible combination can have a positive effect on revenues. Because it gives our customers the secure

feeling of buying from a company that shares their views and values. If we use resources efficiently, conserve energy and improve working conditions to increase our employees’ motivation, this also results in cost savings, which again supports our business goals.

Such improvements are only possible if we have the active

“Responsibility for the environ

Building Awareness Through Certification

Sonopress Hong Kong is the first company in the Sonopress group to introduce an ISO 14001:1996 certified environmental management system. The certification audit was held in January 2005. William Wan, CEO Sonopress Asia, sums up the process from his perspective:

"The high standards imposed by our international customers extend not only to quality, but also to environmental friendliness. This includes the adoption of a systematic, accredited environmental management system.

This raised the challenge of deepening our knowledge about the relevant legislation and its interpretation. Our employees had very little experience dealing with environmental issues and protective regulations – this is common in China. We turned to external consultants for the in-depth training and hands-on support required. The Quality Assurance Department handled the project management for the entire certification process, and other departments were assigned clear tasks in their respective fields.

Just a few months after its implementation, the process has already produced a variety of positive results: Both the management and the employees

have deepened their awareness of environmental issues and a management system to this end. All of us have become more 'environmentally conscious' and reflect this to the outside as well – to suppliers of our resources and upstream products, and to customers. We also experience daily that protecting our environment and resources doesn't necessarily cause costs. Frequently it results in areas of savings potential that we were not aware of before.

In a very short time, we have made great progress as a company and as individuals. I can say in good conscience that our official environmental policy is not just words on paper, but is practiced every day.



For William Wan, CEO Sonopress Asia, environmental protection is an integral part of business management.

This means: We strive to fully comply with all laws, closely monitor the use of hazardous substances, systematically prevent pollution and reduce waste, and reuse and recycle wherever possible."

support of our suppliers. We therefore involved them in developing our environmental efforts very early on. In our opinion, it is very important that our self-imposed standards be passed down throughout the supply chain.

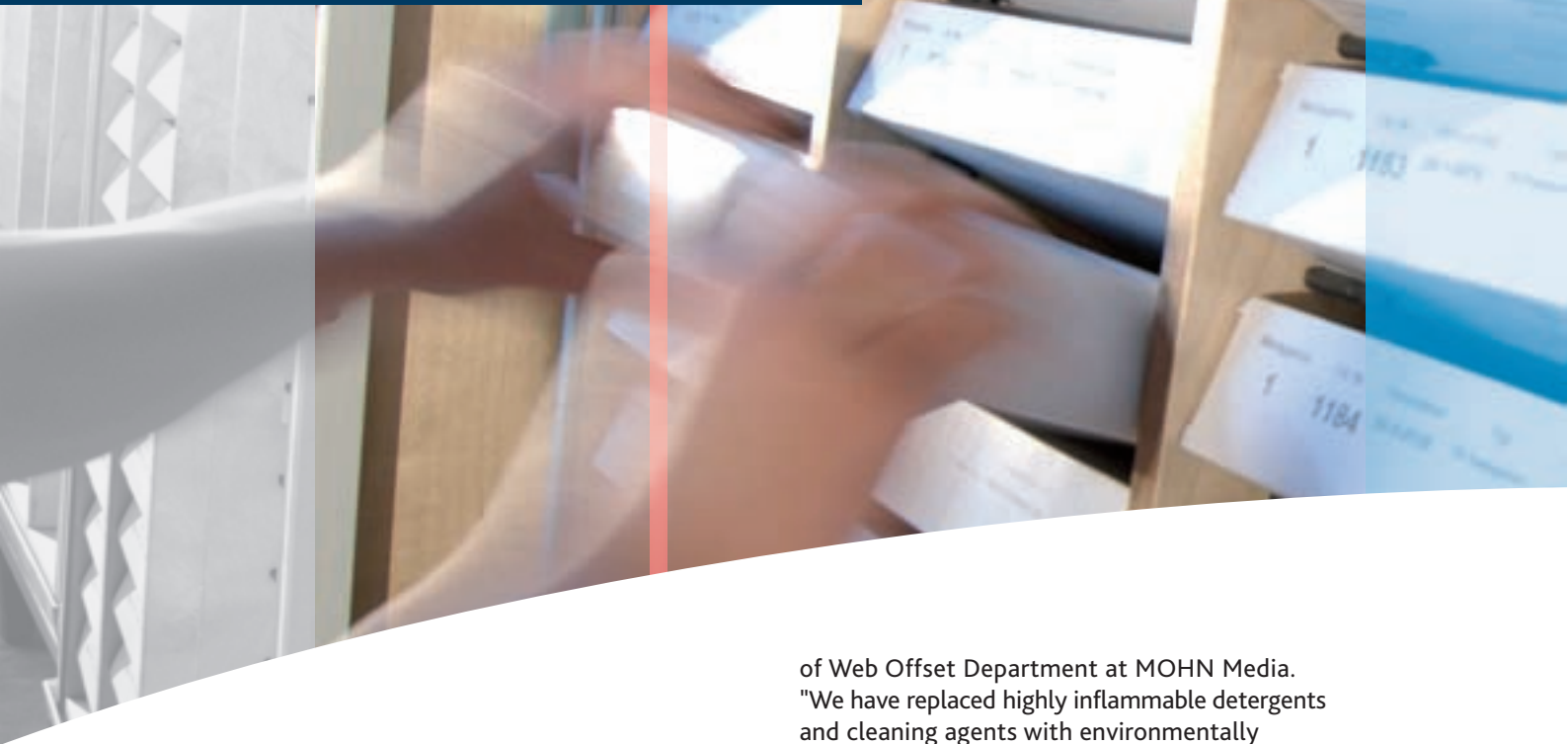
For this reason, we ask our suppliers to develop an environ-

mental policy and to demonstrate to us how they organize their environmental efforts and what areas of accountability they include. They should know what impact their work has on the environment, and set goals to reduce the strain on the environment."

A handwritten signature in white ink on a dark blue background. The signature is stylized and appears to read 'Ingemar Stedt'.

Ingemar Stedt
Senior Manager
Catalogue Procurement Services
Inter IKEA Systems Service AB

ment"



Reducing the use of solvents

In international competition, a company's success can no longer be measured only in terms of economic criteria: Aside from economic and social factors, environmental protection is increasingly important. This is why it is a longstanding top priority for our subsidiary **MOHN Media**. Since the mid 1990s, the company has successfully integrated the environmental management norms DIN ISO 14001 and EMAS into its business processes. In 2003, MOHN Media was certified under the



At MOHN Media, Roland Witte is working to reduce the use of solvents.

chain-of-custody criteria of the Forest Stewardship Council (FSC). As a result, we have substantially contributed to the past year's accelerated market growth for printing paper produced from sustainable forestry: The number of certificates in the printing and paper sector and the resulting increase in the availability of FSC paper quality more than quadrupled in 2004. "One of the key goals of our environmental program is to reduce the use of solvents," says Roland Witte, Head

of Web Offset Department at MOHN Media. "We have replaced highly inflammable detergents and cleaning agents with environmentally friendly alternatives and lowered the use of isopropanol far below the sectoral average. Environmental protection is part of our daily work – and therefore it depends on the efforts of all our employees. With their dedication, their ideas and their knowledge, they help us learn more about and make continual improvements in the handling of natural resources."

Comfortable climate even with 15 percent lower energy usage

In 2000, arvato took advantage of an opportunity offered by the construction of a new office building in Gütersloh, Germany, to significantly cut its energy consumption and costs through an intelligent method that combines heating and cooling. It installed "a system of thermally active building structures."

This technology exploits the heat and cold storage capacities of water and concrete. Depending on the particular need, warm or cold water runs through tube registers that are integrated into the concrete ceilings. The temperature of an area of about 3,800 square meters can be controlled through the thermal activation of massive building structures.

The activation of the building structures by the so-called "polyactive system" covers the entire cooling load and about 70 percent of the heating load of the entire office complex. Heating radiators are used only to offset the cold air inflow via the window surfaces. Jörg Holthöfer, who oversees air-conditioning technology at **arvato logistics services**, sums up the experience of the past five



years: "We are very satisfied with this system. It runs pretty much on its own and only creates minimal operating and maintenance costs. The employees in the offices also appreciate the draft-free room climate. What's more, we save about 120,000 kilowatt-hours of energy per year."

Well-controlled summer of the century

The modern heating and cooling system works efficiently and reliably throughout the year and even stood up to the summer of the century in 2003: Despite weeks of record temperatures up to 40 degrees Celsius, the employees kept their cool in their offices.



Jörg Holthöfer saves 120,000 kilowatt-hours of energy a year with the help of intelligent heating and cooling technology.

The system's one disadvantage is that room temperatures cannot be individually adjusted because the discharge in the concrete ceilings is a purely passive process in thermal activation of building structures. It is offset by individual control units on the radiators installed in the offices.

"In terms of environmental sustainability, the thermal activation of building structures does more than produce energy savings," Holthöfer says. "That's because the concrete is used in two ways – not only in its primary function as a construction material, but also for climate control."

Fostering employee health

Aside from economic and environmental goals, a responsible company must consider social issues, above all the health of its employees. Employees at arvato's headquarters in Gütersloh, Germany, are looked after by the company's own medical staff.

Two physicians who have specialized in occupational medicine work with qualified support personnel to oversee the management of such things as first aid within the company, and general and special preventive check-ups for shift workers and executives. The doctors also advise the management, the employees and their representatives about matters related to workplace design and health protection.

In addition, two company doctors' offices are open every day to offer general care to employees. Employees can use these resources to obtain medical advice that extends beyond their working environment and receive treatment when necessary. A key focus is medical consultation with respect to business and private trips abroad. Vaccination plays a particularly important role here. In addition, various health promotion activities are conducted in cooperation with the Bertelsmann health insurance fund, such as annual flu vaccinations. The goal of these programs is to strengthen our employees' health awareness – to the benefit of the individual and the company.



Dr. Sebastian Köhne, chief company physician



“We put high hopes in companies that act as ‘environmental trendsetters’. Sustainability, meaning economic viability combined with ecological and social compatibility, is part of the daily reality at their company.

arvato AG has already taken the first steps down this road. With several FSC-certified printing facilities, it is a driver of a new environmental trend in the printing sector. The first environmental report marks a milestone. The task now is to continue down this road, render the environmental work more systematic

and gain the active support of employees.”

A handwritten signature in white ink on a dark blue background, appearing to read 'D. Prokosch'.

Dr. Peter Prokosch
Managing Director WWF Germany

“Combining economic viability

ASSUMING RESPONSIBILITY FOR OUR ENVIRONMENT

by Dr. Peter Prokosch,
Managing Director WWF Germany

The natural richness of forests, rivers and oceans has decreased rapidly over the past 30 years. We are currently witnessing the biggest decline in animal and plant life since the extinction of dinosaurs. And there is no end in sight to this development. Many people are concerned by this, but often still do not change their behavior as a result. This is why the WWF has made it its mission to preserve biological diversity – a living planet for us and for our children!

Although the exploration of our flora and fauna is a firm part of science, we still know too little about the highly complex ecosystems. With how much species loss can a system cope before it falls out of balance and collapses? It is a well-known fact that the residents of the western hemisphere consume markedly more resources than the other parts of the Earth. If all human beings lived this extravagantly, we would need nearly three additional planets. The world's consumption of energy increased sevenfold between 1961 and 2001. Another increase of about 60 percent is forecast until 2030. A large share of the required energy is generated through the burning of fossil raw materials. The resulting climate change is a serious threat to man and the environment. The number of natural disasters will increase and the loss of species will accelerate. The currently measurable global warming is expected to release the CO₂ that is tied up in biomass even faster and thus accelerate the greenhouse effect. It is a self-energizing cycle with unfathomable consequences.

How can we counter this threat? The WWF believes the solution is the measured use of resources through environmentally sound behavior. Each company and each individual must assume responsibility for our environment.

Companies as trendsetters

We place high hopes in companies that pioneer these efforts as "environmental trendsetters". Sustainability – that means economic viability combined with ecological and social compatibility – is an integral part of their day-to-day operations.

They analyze their environment and their actions are guided by the relevant findings. In this way, such trendsetters make a responsible contribution to our future and act as role models.

arvato AG has already ventured down this road. It is one of the first companies to have committed itself to environmental protection in its core area of competence, as an international media service company. Through the certification of several printing facilities, arvato has created the conditions for processing paper with the FSC logo. The company thus drives a new environmental trend in the printing industry and supports the protection of biodiversity simultaneously.

A precondition for improvements: reporting

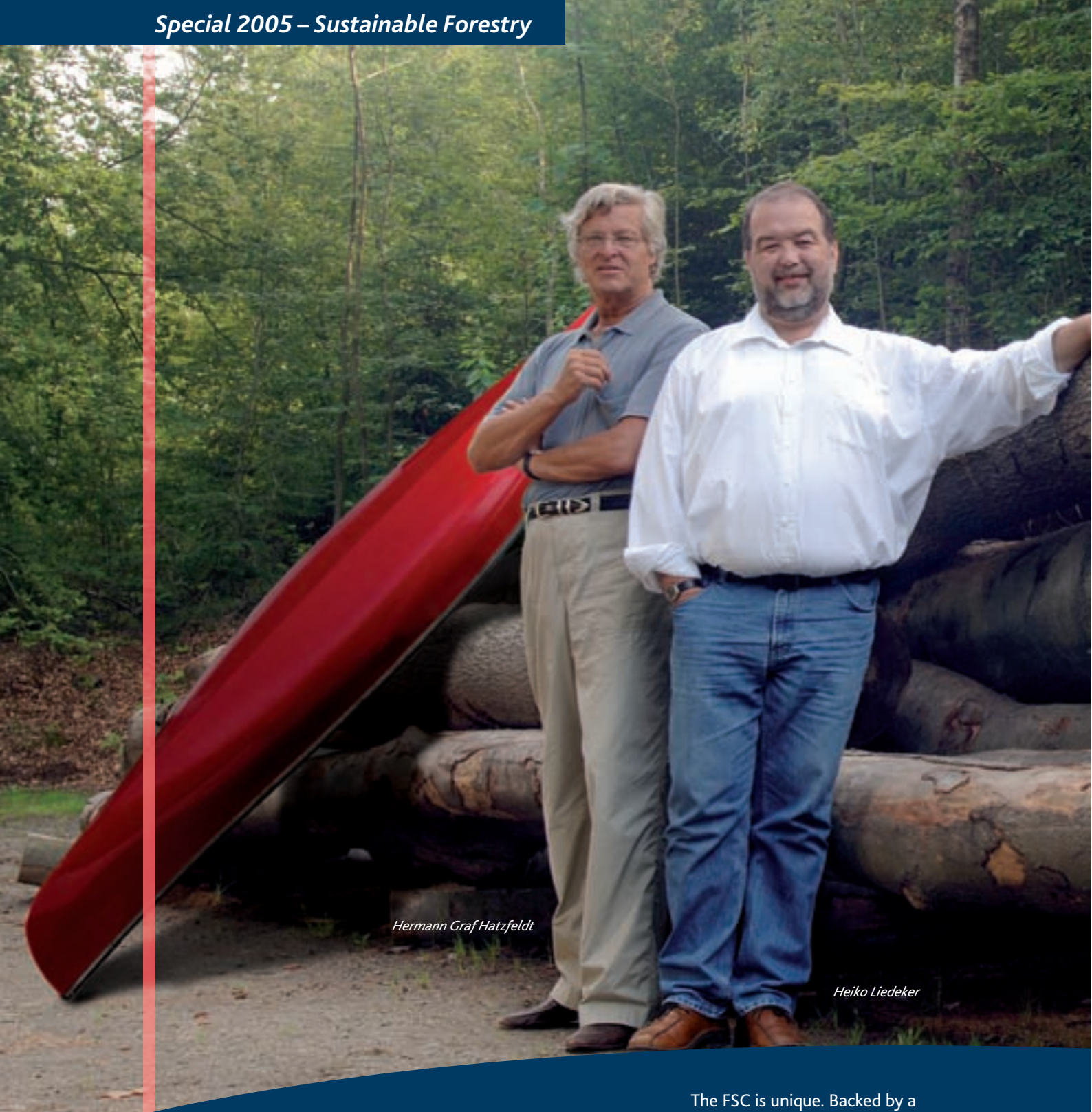
With its first environmental report, the company is now laying a systematic foundation for the continuous tracking of future environmental impact. This is an important measure because only the presentation of energy and raw material consumption makes it possible for the corporate divisions to gain orientation, rigorously work toward improvement and document such improvements. The systematic collection and presentation of key environmental figures allow for peer group comparisons of production sites and enable them to pursue a pioneering role today. All the while, environmental commitment does not represent an additional bothersome task, but a significant economic contribution. Less energy and less waste also mean lower costs – and thus benefit the bottom line as well.

The same applies to the transportation area. Which goods are being moved in what way? How many kilometers do employees travel on business trips and how much CO₂ do they produce along the way? Can the fleet of company vehicles be optimized? Can the number of train trips be increased? There are certainly a lot of starting points for improvements. But they will only be reached if the workforce plays an active role as well. And that requires information, training and motivation.

I am very pleased that arvato AG has tackled the integration of environmental responsibility into its business activities in these difficult times. The promising moves in the area of printing/paper/certification make us anxious to watch the company's development in the coming years.

www.panda.org

and ecology”



Hermann Graf Hatzfeldt

Heiko Liedeker

"Ten years after its establishment, the FSC is recording one success after the other: more than 54 million hectares in certified forest area, more than 4,500 certificates awarded worldwide; FSC-certified alternatives are available for nearly all product segments ...

The FSC is unique. Backed by a large number of very diverse interest groups, it creates accepted solutions that allow for ecologically, socially and economically sustainable forestry. This is the only way to ensure that our forests can remain the unique source of biological diversity, the carbon accumulator and the raw

"FSC makes paper fit for the future"

HOW PAPER PRODUCTS CAN PROTECT FORESTS

by **Hermann Graf Hatzfeldt**,
Chairman of the FSC Working Group
Germany e.V.

Every minute, 26 hectares of forest are destroyed around the world. That corresponds to the size of an eight-kilometer stretch of three-lane highway. If a driver tried to match the pace of forest destruction, he would fly off the road at a speed of 300 mp/h!

These losses are the result of irresponsible forest management. Wood is cut ruthlessly and often illegally – for its own sake and for the money that can be made from selling it directly, or to turn forest soil into farmland or for other purposes. The result is extensive damage to the soil, climate and biological diversity and thus the habitat for all, not least the indigenous population.

Sound, careful forestry that observes the principles of sustainability and takes equal account of the demands of nature and human beings is the key to forest preservation. The FSC's mission is to ensure sustainable forest management around the world.

Making a difference in forestry

That is a task of the century, or even the millennium, not only for forestry, but also for the downstream wood and, in particular, paper industries. Today, paper accounts for 40 percent of commercially used wood. And despite increasing digitization, the

trend is still pointing upward. Wood and paper processing companies, however, have the opportunity to make a difference – through FSC certification. Like arvato AG: Thanks to the certification of its subsidiaries MOHN Media and GGP Media, numerous FSC-certified print products reach the market. This encourages suppliers and customers to assume entrepreneurial responsibility for our forests. The positive impact of this engagement along the product chain can be felt all the way into the forests.

This is illustrated by the following example: The world's FSC-certified forest area amounted to 40 million hectares at the end of 2003. By mid-2005 it had already grown to 54 million hectares. During this period, the number of European manufacturers of FSC-certified printing paper rose to 18 from 6, and the number of FSC-certified printing firms jumped to 59 from 20. A similarly strong trend can be observed in the global printing and paper industry. FSC is making paper fit for the future. Global leaders have recognized this and are advancing this development.

Ecological and economic benefits

As a service provider, arvato can also illustrate the responsible use of forests to its customers. Successful persuasion requires a concrete knowledge of ways that beneficial measures can be implemented. This allows companies to identify existing obstacles and find solutions. ►

material reserve that they are today.

In an exemplary manner, environmental groups, social organizations and businesses pull together for the FSC. This broad social support has made the FSC a globally respected pioneer of sustainable development and responsible use of our natural resources. The visions of our partners, such as arvato AG, and their rigorous introduction of FSC-certified products already

make a positive impact on forests in all parts of the world. It is thanks to their efforts that the FSC logo is increasingly found on a broad range of products in major supermarkets.

FSC is the only credible testing certificate that guarantees – both to industrial and private consumers – that the forest products they use come from environmentally sound and socially responsible forestry."



Heiko Liedeker
Managing Director
FSC International Center, Bonn

re"



► Businesses are learning that they benefit from FSC certification. Their benefits range from improved sales, corporate controlling and risk management all the way to the satisfaction of their employees and customers.

In Germany, the FSC aims to raise the market share of FSC-certified products and thereby protect large forest areas through sustainable forest management.

When demonstrably "good" forest products command a relevant market share, this also impacts the production standards of the rest of the market. The result: The management quality of the forest areas without FSC certification also improves. To this end, the FSC works very closely with market participants like arvato AG, which use large quantities of wood.

The Forest Stewardship Council (FSC)

The idea of certified forestry arose at the end of the 1980s in the context of the debate about the destruction of tropical forests, as well as forests in Canada, Russia and Chile. The FSC was created in the aftermath of the Rio Environmental Summit in 1993. It is a non-governmental, non-profit organization that promotes the ecologically and socially responsible use of the world's forests. It is supported by environmental organizations, trade unions, representatives of indigenous peoples as well as a large number of companies from the forestry and wood processing sectors around the world.

The goal of the FSC is to help improve forest management worldwide. The organization sees itself as a platform where stakeholders with a diverse array of interests in forestry come together and where they can reach a consensus on sustainable forest management. Forest management standards with ecological and social criteria are created on the basis of this consensus.

Once a year, independent certifiers check whether forest owners adhere to these standards. Only when they have passed this test can the owners attach the official FSC logo to their wood and market it accordingly. Additional checks ensure that FSC-certified wood is not illegally mixed with non-certified wood during further processing and marked wrongly.

The FSC logo for wood from sustainable forest management enables consumers to purposely choose environmentally and socially sound products and thereby ensure that their purchase decision helps promote the responsible use of our forests. For companies in the forestry and wood processing industries as well as traders, the FSC logo can offer an incentive to promote the sale of wood from sustainable forest management.

www.fsc.org

FIRST COMPREHENSIVE REPORT

For the first time, arvato AG has compiled a comprehensive environmental report covering its 250 group-wide companies which have a total 33,813 employees and operate in 28 countries. The figures relate to fiscal year 2004. Since this is the first such survey, figures from previous years are not available.

Given arvato's extensive and varied range of product offerings, the activities of arvato companies differ considerably in their environmental impact. They can be classified into two main groups:

First, there are the corporate divisions of arvato print and arvato storage media with nearly 100 companies that produce printed products (e.g. books and magazines) as well as storage media (e.g. CDs and DVDs) from purchased raw materials and pre-products. Within the arvato group, it is

these production processes that have the biggest impact on the environment, given the use of energy, the consumption of raw, auxiliary and operating materials as well as the waste and emissions resulting from the production processes.

The second group is made up of the corporate divisions of arvato direct services, arvato logistics services (included under arvato services in this report because of joint appearance outside Germany as arvato services) and arvato systems. They comprise more than 140 service providers – from service centers for such operations as telecommunications and software companies through repair and the delivery of electronic equipment and accessories to the final delivery of printed and storage media. Energy sources, resources and other materials are used only to a limited extent here. The resulting waste and emissions are accordingly lower.

Input	Total arvato	Output	
Raw materials (tons)	1,491,975	Products (number in mil.)	14,765
Paper / cardboard	1,426,830.0	Printed products	9,198.7
Ink / lacquer	34,687.9	Calls / business transactions	2,550.2
Plastics (PC, PS, PE etc.)	30,260.9	Mailings / shipments	1,587.3
Other raw materials	196.4	Storage media	1,260.4
Auxiliary material (tons)	397,560	Pallets, packed	81.4
Packaging	376,029.8	Cardboard containers	67.1
Plastic films	9,744.1	Warehouse articles (modems, cartridges etc.)	19.4
Binding materials	5,923.6	Waste (tons)	272,206
Glues	5,862.4	Waste for recycling	223,451.6
Operating materials (tons)	13,334	Waste for disposal	48,754.0
Solvents	2,623.0	Share of waste that requires special monitoring among both types	1,111.9
Chemicals	928.7	Sewage water (m³)	2,082,739
Cleaning agents	373.8	Emissions (tons)	
Lubricants	125.8	Carbon dioxide, fossil	701,643.7
Other operating materials	9,282.8	VOC	1,800.5
Fresh water (m³)	2,749,261	Sulfur dioxide	963.9
Total energy sources (MWh)	1,440,941	Nitrogen oxides	956.5
Thermal and process heat (MJ)	2,350,820,969.6	Carbon monoxide	442.6
Natural gas (Nm ³)	11,962,588.4	Dust / particles	118.7
Fuels (l)	4,083,528.9		
Electricity (MWh)	650,618.5		

arvato print and arvato storage media

In fiscal 2004, the more than 15,000 global employees of the "producing" corporate divisions, arvato print and arvato storage media, generated more than 10.4 billion **products**. These were mostly printed products – from multi-colored, large-format illustrated books through magazines and catalogues to brochures and CD and DVD covers. Production of these storage media amounted to more than 1.26 billion units.

In the process, nearly 1.5 million tons of **raw materials** were used, including paper and cardboard (1.4 mil. t) as well as plastics like polycarbonate and polystyrene (29,150 t) and ink and lacquers (34,700 t). The **auxiliary materials** used in production that are part of the finished product but of little significance in terms of their volume amounted to about 54,600 tons. Packaging material accounted for the major share of this total (33,000 t), followed by plastic films (9,740 t), binding materials (5,920 t) and glues (5,850 t). Consumption of **operating materials** – which are necessary for production but no longer contained in the finished product – amounted to 13,300 tons during the fiscal year. The multitude of materials in this category includes solvents (2,600 t), various chemicals (930 t), cleaning agents (350 t) and lubricants (126 t). About 2.5 million cubic meters of **fresh water** flowed into arvato-wide production in 2004.

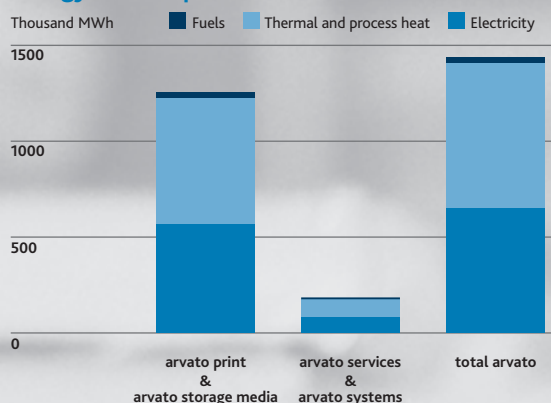
The production-related **energy requirement** is covered by **electricity** (567 mil. kWh) as well as **thermal and process heat** (2.0 mil. GJ). If this heat volume were converted into heating oil, consumption corresponded to nearly 86 million tons of light heating oil. The use of **fuel** (diesel, gasoline and propellant gas) amounted to nearly 3.4 million liters in fiscal 2004. In addition, nearly 12 million cubic meters of **natural gas** were used for drying and process heat.

The production of our more than 10.4 billion products generated about 250,000 tons of **waste** and 1.9 million cubic meters of **sewage water**. Nearly 82 percent of worldwide waste was recycled, including 194,000 tons of paper and 5,900 tons of plastics. Only 1,100 tons (0.4 percent) were considered to be waste that requires special monitoring under the European Waste Code.

The **emissions** caused by energy consumption, production and transportation totaled nearly 630,000 tons of carbon dioxide, 850 tons of nitrogen oxides, 910 tons of sulfur dioxide and 410 tons of carbon monoxide worldwide in fiscal 2004, to list only the most significant amounts.

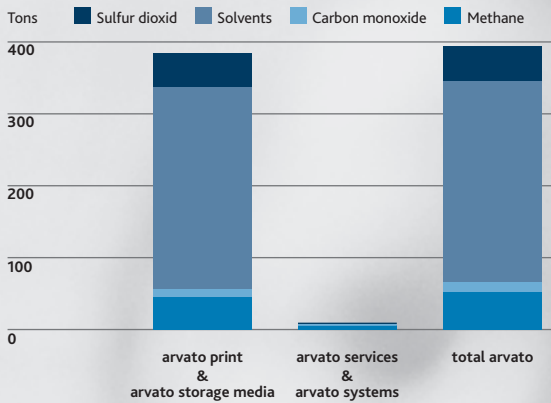


Energy consumption



Input	arvato print & arvato storage media	Output	
Raw materials (tons)	1,484,990	Products (number in mil.)	
Paper / cardboard	1,420,953.4	Printed products	9,001.3
Ink / lacquer	34,687.9	Storage media	1,260.4
Plastics (PC, PS, PE etc.)	29,152.9	Pallets, packed	74.2
Other raw materials	196.3	Cardboard containers	64.0
Auxiliary materials (tons)	54,605	Mailings / Shipments	33.5
Packaging	33,091.3	Waste (tons)	253,024
Plastic films	9,744.1	Waste for recycling	207,341.7
Binding materials	5,923.6	Waste for disposal	45,682.1
Glues	5,846.1	Share of waste that requires special monitoring among both types	1,097.2
Operating materials (tons)	13,288	Sewage water (m³)	1,912,797
Solvents	2,622.0	Emissions (tons)	
Chemicals	928.7	Carbon dioxide, fossil	629,528.9
Cleaning agents	352.9	VOC	1,591.8
Lubricants	125.8	Sulfur dioxide	908.0
Other operating materials	9,258.8	Nitrogen oxides	853.5
Fresh water (m³)	2,538,876	Carbon monoxide	410.1
Total energy sources (MWh)	1,256,315	Dust / particles	114.3
Thermal and process heat (MJ)	2,013,297,466.9		
Natural gas (Nm ³)	11,913,311.4		
Fuels (l)	3,353,045.4		
Electricity (MWh)	566,870.6		

Summer smog potential in ethene equivalents



arvato services and arvato systems

In fiscal 2004, more than 18,000 employees worldwide worked on 4.33 billion "products" in the service divisions arvato services and arvato systems. These are not only tangible products – here, too, these include mostly printed products and mail-order articles – but also a substantial share of services like telephone calls in service centers. For this reason, the processed volume of **raw materials** amounted to just under 7,000 tons. Here, too, the focus was on paper and cardboard (nearly 5,900 t) as well as plastics (1,100 t). **Auxiliary materials** played a far more significant role (about 343,000 t), almost always in the shape of packaging material. In turn, just under 46 tons of **operating materials** were consumed, mostly cleaning agents (21 t). The services division required only 210,000 cubic meters of **fresh water**.

The company covered its **energy requirements** with 84 million kilowatt-hours of **electricity** and

0.34 million gigajoules of thermal heat. If the **thermal heat** were converted into tons of heating oil, this amount would correspond to 14.4 million tons of light fuel oil. The amount of **fuel** (diesel, gasoline and propellant gas) that was used totaled 730,000 liters. In addition, about 49,000 cubic meters of **natural gas** were used for such tasks as shrink-wrapping machines, drying and process heat.

Altogether, the services division produced nearly 19,200 tons of **waste**. Recyclable waste accounted for nearly 84 percent of this (16,110 t), and less than 15 tons was considered to be waste that requires special monitoring. **Sewage water** totaled nearly 170,000 cubic meters in 2004.

The major **emissions** produced by arvato services and arvato systems included 72,000 tons of carbon dioxide from fossil sources, 100 tons of nitrogen oxides, 56 tons of sulfur dioxide and slightly more than 32 tons of carbon monoxide.





Input		arvato services and arvato systems		Output	
Raw materials (tons)	6,985	Products (number in mil.)	4,331		
Paper / cardboard	5,876.6	Calls / business transactions	2,550.2		
Plastics (PC, PS, PE etc.)	1,108.1	Mailings / shipments	1,553.8		
Other raw materials	0.1	Printed products	197.4		
		Storage media	160.6		
Auxiliary materials (tons)	342,955	Warehouse articles			
Packaging	342,938.6	(modems, cartridges etc.)	19.4		
Glues	16.3	Pallets, packed	7.2		
		Cardboard containers	3.1		
Operating materials (tons)	46				
Cleaning agents	20.9	Waste (tons)	19,182		
Solvents	1.0	Waste for recycling	16,109.9		
Other operating materials	24.0	Waste for disposal	3,071.9		
		Share of waste that requires special monitoring among both types	14.7		
Fresh water (m³)	210,385				
Total energy sources (MWh)	184,626	Sewage water (m³)	169,942		
Thermal and process heat (MJ)	337,523,502.6				
Fuels (l)	730,483.5	Emissions (tons)			
Electricity (MWh)	83,748.0	Carbon dioxide, fossil	72,114.8		
Natural gas (Nm ³)	49,276.9	VOC	208.6		
		Nitrogen oxides	103.0		
		Sulfur dioxide	55.9		
		Carbon monoxide	32.5		
		Staub / Partikel	4.4		



Key figures with different reference figures

Operating key figures are created to better gauge the environmental impact of business activities. This process allows for the comparison of a company's environmental achievements over several years, independent of current production fluctuations. These ratios are therefore an important instrument of corporate controlling.



The heterogeneous structure of the companies bundled under arvato AG does not allow for the determination of a common denominator for ratios. Therefore, again in this section, we have divided the companies into two sectors - production and services.

Product weight was chosen as the reference ratio for the creation of key figures in the production of print and storage media in the production sector. It is defined as the sum of purchased raw and auxiliary materials minus disposed waste from production. This calculation yields a total product weight of 1.287 million tons for fiscal 2004. The resulting key figures reflect the volume per ton of product in 2004. The seven selected arvato ratios relate to the energy and raw material requirements as well as emissions.

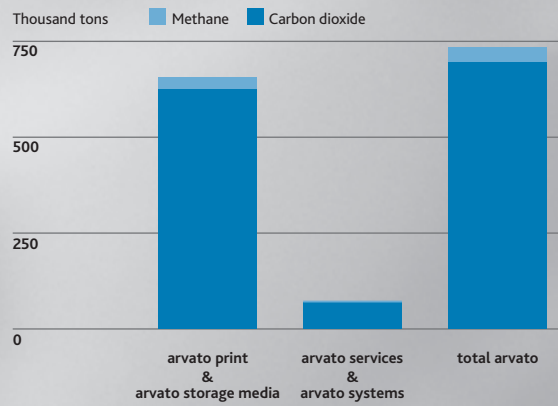
Key figures arvato print & arvato storage media

Amount per ton of product weight

1. Energy requirements	0.98 MWh
2. Raw material needs	1.20 t raw material
3. Water requirements	1.97 m ³
4. Greenhouse effect	0.76 t CO ₂ -equivalent
5. Summer smog potential	0.30 kg ethene equivalent
6. Acidification potential	1.17 kg SO ₂ -equivalent
7. Eutrophication potential	0.09 kg PO ₄ -equivalent



Greenhouse effect in CO₂-equivalents



For the arvato companies in the services sector the number of employees was chosen as the suitable reference figure. Accordingly, material and energy consumption as well as the impact of emissions were calculated per employee in this area. Since the companies' activities in the three service divisions often are not linked to material "products" and therefore require no raw materials, it was not possible to identify a key figure for raw material requirements.

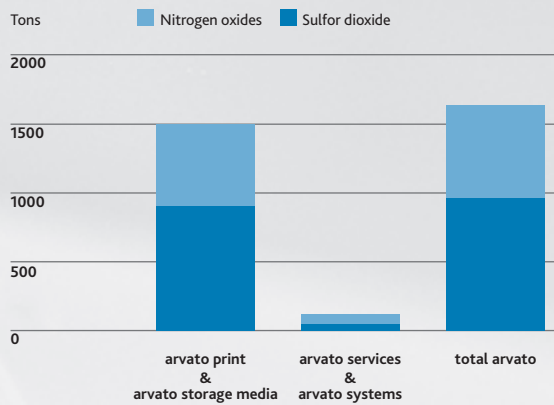


Key figures arvato services & arvato systems

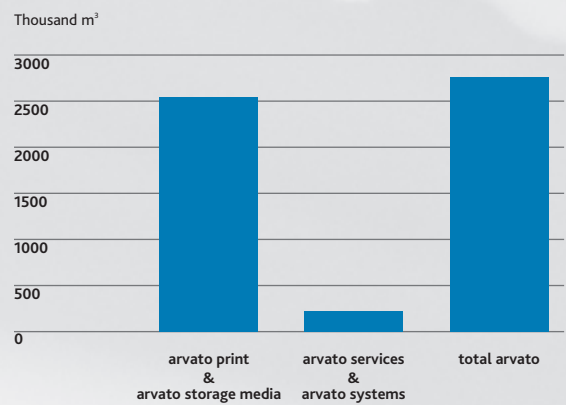
Amount per employee

1. Energy requirements	13.11 MWh
2. Water requirements	14.9 m ³
3. Greenhouse effect	5.4 t CO ₂ -equivalent
4. Summer smog potential	0.70 g ethene equivalent
5. Acidification potential	9.09 kg SO ₂ -equivalent
6. Eutrophication potential	0.95 kg PO ₄ -equivalent

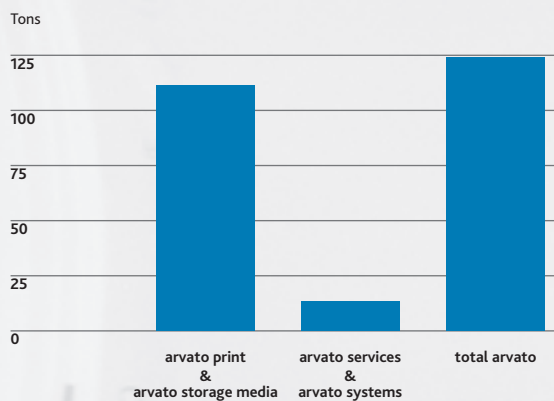
Acidification potential in SO₂-equivalents



Water requirements



Eutrophication in phosphate equivalents



GLOSSARY

Acidification Potential

Describes the degree of acidification of soil and water by the formation of reference figures (SO₂-equivalents). Also referred to as acid rain or forest damage.

Carbon Dioxide

CO₂; Gas arising from the complete combustion of organic substances (gas, oil, coal, wood etc.). Is a major contribution to the greenhouse effect.

Carbon Monoxide

CO; Toxic gas arising from the incomplete combustion of organic substances.

EMAS

Environmental Management and Audit Scheme; EU-regulation for voluntary participation by organizations in a community eco-management system.

Environmental Guidelines

Environmental oriented guidelines and instructions of an organization.

Environmental Management System

Voluntary instrument of precautionary protection of the environment for systematic investigation and decrease of companies' environmental effects.

Eutrophication

Overfertilization of soil and water. The main polluters causing eutrophication are nitrogen oxides and phosphoric compounds (NO_x). The reference unit is phosphate (PO₄)-equivalents.

FSC

Forest Stewardship Council; International organization with headquarters in Bonn and national working groups in 35 countries. www.fsc.org



Greenhouse Effect

Describes the effect of transformation of sun rays into heat under the influence of greenhouse gases as CO₂ and certain VOCs. The greenhouse effect causes a global warming of earth's atmosphere. The reference unit is CO₂-equivalents.

Isopropanol

Also 2-Isopropyl; One of the volatile organic components (VOC) which are causing summer smog. Used for the fountain solution in the offset printing process.

ISO 14001

International applicable range of standards applying to environmental management systems.

ISO 9001

International applicable range of standards applying to quality management systems.

kWh

Kilowatt hour; physical unit for energy, 1.000 kWh = 1 Megawatt hour (MWh).

Light Fuel Oil

"Extra light" heating oil with ultra low sulphur content.

MJ

Megajoule; physical unit for energy, 1 MJ = 0.278 kWh; 1.000 MJ = 1 Gigajoule (GJ).

Nitrogen Oxides

NO_x; primarily from oxidation of airborne nitrogen in combustion processes, co-responsible for acid rain and eutrophication.

OHSAS 18001

International certification standard applying to health and safety management at working environment.

Sulfur Dioxide

SO₂; arises during the combustion of fuels containing sulphur, particularly coal. It has a negative effect on human health and vegetation and contributes to the creation of acid rain.

Summer Smog

Describes the formation of ozone mostly near the ground and is influenced by heat and sun energy. It requires certain volatile organic hydrocarbons (VOC) and catalyst substances (NO_x). The reference unit is ethene equivalents.

Toluene

Clear organic liquid. Used for cleaning purposes, as an additive in fuels and a chemical substitute for benzene. It is also used as a solvent for inks in the rotogravure printing process.

VOC

Volatile Organic Compounds; are compounds containing organic carbon which are co-responsible for the formation of summer smog and the greenhouse effect.

WWF

World Wide Fund For Nature ("World Wildlife Fund" in North America); an international, non-governmental organization for the protection of nature and environment. WWF is active in almost 100 countries. www.panda.org

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