" Throughout the world, everybody agrees that action has to be taken fast to combat global warming. It's important that industry plays its part, partly by making information available about the amount of CO_2 they emit per product or service.

Here at RSDB we've set up a taskforce to track recent developments in measuring the carbon footprint of a business's products or services. In the near future our clients will undoubtedly start to ask questions about the carbon footprint of our products. They can use the data when they calculate the impact of their magazines, catalogues or other products. The taskforce participates in Europe-wide printing industry groups and is involved in developing a single standard to allow product comparisons and to set concrete targets. A standard like that demands uniformity in the methodology employed, and transparency. What that means is that, for each component of every product there has to be a standard, generally accepted CO_2 calculation. To give an example: energy is a significant component of CO_2 emission, but the conversion factors used differ from country to country. In the UK 1 kWh emits 0.523 kg CO_2, while here in Holland we use 0.622 kg per kWh. We have to have clear guidelines about that. We also have to agree about who includes what in their calculations. Does the paper manufacturer include CO_2 emitted during transport to our door? Or do they calculate ex-works, so we have to include transport in our products' carbon footprint?

Apart from discussions like these, RSDB just carries on cutting energy consumption even further. At Roto Smeets Deventer, for example, we've done this by compensatory engraving and concentration-controlled extraction above the wide-body presses. This has cut 1,689,492 kWh off the 2006 consumption, which is a decrease of 1050 metric tons of CO_2".

Raymond te Riele, Environmental Coordinator Roto Smeets Deventer

5. Concern for the Environment

5.1 RSDB and the environment in 2007

RSDB values the environment in all its aspects and has a professional Environmental Staff Department. RSDB is not obliged to publish a report, but as a major player in the Netherlands and Europe, the group does feel a moral obligation to do so. The intention is to let people see what we're doing, where we are and where we want to go.

As you may have read earlier in this report, RSDB has clustered its activities in two business lines: Print Productions and Marketing Communications. The main focus of environmental care at RSDB is on Print Productions since this business line includes the printing plants and thus those businesses where the environmental aspects are most acute. RSDB had five web printing plants in the Netherlands: Roto Smeets Deventer and Roto Smeets Etten are rotogravure plants, while Roto Smeets Weert, Roto Smeets Utrecht and Senefelder Misset are web offset plants. Besides these, RSDB has two sheetfed offset plants, Roto Smeets GrafiServices Eindhoven and Roto Smeets GrafiServices Utrecht. There is one web printing plant abroad, Antok in Hungary, in which RSDB owns an 85% share.

Web printing plants

In a web printing plant the paper runs off a roll onto the press. The paper web is impressed with ink as it passes over cylinders holding the printing formes. The web plants serve the national and international markets for mail order catalogues, retail printing, directories, sponsored and commercial magazines. Roughly one third of all print produced goes abroad, to the UK, USA, Belgium, Sweden, Germany, Denmark, and France. Sheetfed offset plants, where individual sheets of paper are inked on the press, usually print for the regional and national business market.

Prepress activities precede the printing: text and images have to be made up into pages and the press formes must be prepared. After printing comes the finishing process: finishing the printed matter by cutting it to size, folding it, gluing, etc., followed by dispatch.

The bulk of the raw materials input to all printing plants is made up of paper, ink and energy. The offset plants also purchase aluminium plates for the preparation of printing formes. The process also requires a variety of ancillary chemicals, including cleaning materials, and other aids, such as stitching wire, adhesives and packaging.

2007 and beyond

As a group, RSDB's performance on a number of environmental indicators was better in 2007 than in 2006 in respect of the emission of volatile compounds (VOC), energy and water consumption and the use of ancillary materials.

The consumption of process materials showed an increase: our own efforts in this area were not able to neutralise the influence of external factors (order profiles). The quantity of a variety of wastes also increased per tonne of paper input. The most striking increase was process waste falling in the 'abnormal' category, since it was not directly related to the process but rather to reconstruction work.

RSDB keeps a keen eye on processes and technologies that may facilitate improvement of our environmental performance. An example is the introduction of a fully automatic dosing system, GMI, which provides for continuous photographic monitoring of the impression on the outcoming paper web, with continuous feedback to the ink dosing system. GMI has many advantages: the printed matter comes 'on colour' quicker, meaning less paper loss, dosing is continuously optimised, leading to lower consumption of ink and moistening water additives, with less waste due to rejected product.

Another illustration involves initiatives in rotogravure, where the use of a new quality of ink (high-pigment inks) was furthered in 2007. The number of presses fitted with concentration controlled extraction units increased in 2007, leading to considerable energy savings.

A number of new developments were introduced in 2007. For example, the two rotogravure plants implemented paper shrinkage compensation by investing in new engraving machines equipped with special software. The size of the printing cylinder is now adapted to paper shrinkage in advance of the actual shrinkage on the press. The means that less compensation is needed later, which is done by steam moistening, so less energy is used.

Within RSDB investments were made in 2007 in more effective light sources for the Computer to Plate technique. These allow the printing plates to be prepared at the latest possible moment. This last-minute preparation reduces the risk that plates already made have to be discarded because, for example, an order has to be printed on a different type of press (using different plates) than originally planned.

What it all comes down to in the end – whether new techniques are available or not – is a continual effort to perfect process management in every possible area. Care for the environment was a central theme in the past, but over the last few years most attention has been devoted to the process. But this is a multi-faceted procedure, which also benefits the environment. Optimum process management delivers an efficient printing operation, with vast savings in cost, while lower paper consumption, fewer press breakdowns and lower energy consumption altogether represent pure profit for the environment.

5.2 Environmental Policy, Instruments and Measures

5.2.1 RSDB ENVIRONMENTAL POLICY

Environmental policy statement

RSDB has set out its environmental policy in the RSDB Environmental Policy Statement (see p. 67). The individual RSDB companies subscribe to this statement as being their own environmental policy. The statement marks out a concern for safety, health and welfare as an integral part of the group's business policy. Environmental policy is concerned with the prevention of pollution and the avoidance of nuisance to the surroundings. This concern also extends to the use of raw materials and energy.

RSDB regards an environmental management system, which must comply with current national and international requirements, as an important means by which to manage its environmental policy.

RSDB is committed to a continuous effort to improve its environmental performance. The Ecobalance is an aid in charting this performance. Where possible, RSDB seeks to do more than it is legally obliged, insofar, of course, as voluntary measures bear a healthy relation to useful achievement and fit within profit targets. Priority is given to those measures that have a number of effects, not just environmental but also in other areas, such as safety, welfare, quality and efficiency.

Our striving for improvement also means that RSDB is actively involved in a search for less environmentally burdensome processes. RSDB also supports and encourages developments in the paper industry (a major supplier), to ensure that the paper purchased has the best possible environmental prior history. Sustainable forestry and a record of the origin of all fibre material are significant aspects in the selection of our paper suppliers. In terms of its own sales, RSDB seeks to severely limit or exclude any harmful effects from its products, packaging and services.

RSDB makes the necessary information available to all employees, encouraging participation in such training courses as may be required. Interested parties and others, both inside and outside the company, are kept informed about the degree of environmental burden and relevant developments.

RSDB and FSC

In 2006 all RSDB printing plants received certification from the Forest Stewardship Council (FSC). This permits them to serve the growing number of clients that wish to visibly demonstrate their involvement with sustainable business practices, by having the FSC logo printed on their publications. The FSC Chain of Custody (CoC) system is the link between responsible forest management and the consumer. The primary goal of CoC certification is to ensure that the FSC certified material can be followed throughout the production chain. In this way the end user can choose FSC certified products in the knowledge that the material's origin has been controlled and that it satisfies FSC specifications.

RSDB and the climate

RSDB is well aware that its activities also lead to emissions of CO_2, one of the greenhouse gases that plays a significant role in the earth's warming. The widespread awareness of climate change throughout society has already led to a number of initiatives and suggestions, domestic and international, to calculate and compensate for CO_2 emissions (see also interview on p. 54).

At the same time it must be said that this diversity – the lack of a standard, in other words – is currently making it very difficult to substantiate any claim to climate neutrality. This is why, in the present phase, RSDB is devoting most of its efforts to standardisation, partly by participating in committees that are in negotiation with the EU. In the meantime, the RSDB plants are just continuing the line they have been following for years, now: tackle the source, which means mainly cutting down on energy consumption, which benefits the climate. In 2007 the energy consumed per tonne of paper input was less than in 2006 (see p. 65).

Environmental policy agreement

The government has formulated the Netherlands' environmental policy in the National Environmental Policy Plan (NEP Plans 1 to 4). These plans set down the general goals for cutting environmental pollution. In its implementation of this policy, the government translates it in terms of groups of companies – a target group policy. In the process, the general policy goals in the Plans are transformed into concrete targets and

measures. A number of target groups have signed a covenant (an Environmental Policy Agreement) with the government. This was also the case with the KVGO (The Royal Association of Graphical Industries), of which RSDB is a member. RSDB has contributed to the drafting of this covenant for the printing industry and participates actively in its further support. The current Environmental Policy Agreement runs from 1993 to 2010.

To give an impression of the range of agreements covered in the present covenant, they include: the use of certain cleansing materials and other volatile chemicals, reducing the percentage volume of isopropyl alcohol (IPA), measures related to hazardous and operating wastes, regulations for the storage of hazardous materials, and measures to restrict soil pollution. The first period, 1993–2000, gave positive results: the printing plants achieved their targets. The RSDB companies are now well on the way to fulfilling the agreements for the period 2000–2010, thus making this tranche successful, too.

In regard to the emission of volatile organic compounds (VOC), and in view of international climate agreements (Kyoto), the government has asked industry for an extra reduction of 35% before 2010. The printing industry's agreement to achieve this target is still viewed by RSDB as realistic. In regard to toluene, for example, the RSDB companies that work with this compound are already well on their way. In order to achieve the VOC reduction targets, the percentage loss of toluene, for example, must remain at or below 5%. RSDB printing plants have already achieved this percentage.

Packaging

The Third Packaging Covenant ran through 2005. In it, the companies involved agreed to take measures to reduce the quantity of packaging waste that entered landfill or incinerators, with a concrete target for the datum year 2005. For paper and card the specific assignment was to achieve 75% re-use. This target has been met. As of 2006, the Third Packaging Covenant has been replaced by new regulations from the Environment Ministry (VROM). The Paper and Card Management Order [Besluit beheer verpakkingen papier en karton] makes businesses responsible for the prevention, collection and recycling of all the products they bring onto the market. The prevention side still requires greater effort and creativity. In general, it is a fact that the follow-up steps after the first reductions are increasingly difficult (the low-hanging fruit are plucked first), but market demands also play a role. Customers make increasingly stringent demands on their end products, often involving sealing in plastic film so that CD ROMs, extra supplements or other products can be added. This takes nothing from the fact that where packaging is concerned, RSDB companies are swimming against the tide, adopting such measures as materials selection to nullify the effects of such developments as far as possible.

International environmental policy

International environmental agreements, especially at European level, are increasingly coming to influence Dutch environmental policy. In recent years, European regulation has mainly been directed at cutting air pollution (such as CO_2 and fine particulates), sustainable business practices and hazardous (waste) materials policy.

An example is the IPCC (Integrated Pollution Prevention and Control guideline), which dates from 1996 and has since been integrated into the Dutch national Environmental Management Act. The authorities have to integrate this regulation within existing Environmental Management Act permits. In practice, what this means for businesses is that, before 30 October 2007, all existing installations must comply with the 'best available technology' criterion. RSDB plants, incidentally, were all compliant long before this deadline.

There is also new legislation on the storage of hazardous materials (PGS 15), which applies to existing printing plants if they change their business, rebuild or if their licences are changed for any other reason. The PGS 15 requirements will affect all RSDB plants, even if it only affects advance preparations for re-licensing under the IPCC guidelines.

Another example is the REACH guideline. The guideline obliges producers and importers to investigate the specific hazards posed by materials, to record the data, and to make them available to all users in the chain. Printers, as material end users, are closely monitoring what will be expected of them when this measure is implemented. REACH adopts a phased approach to implementation, with an 11-year time frame.

5.2.2. GOVERNMENT RELATIONS

Legislation and licences

Legislation, and the associated licences, involves RSDB companies in a very direct relationship with government. Each company must possess a licence under the Environmental Management Act (called a Wm Licence), for which local government is the relevant issuing authority. The Environmental Management Act regulates not just all matters related to the company and its immediate surroundings, but also, for

example, the discharge of waste water to the sewage system. All licence requirements are checked annually by means of internal tours of inspection and a general inspection. The licence prescribes such matters as noise measurements, determining the emissions of certain chemicals to the air and sampling the rinse water discharged to the sewer from the prepress process. A number of plants are obliged to measure and monitor the soil quality around storage tanks. Statements about the impermeability of flooring to fluids are also tied to regular inspections.

The plants are also legally obliged to have periodic inspections made of equipment such as steam boilers or cooling plant.

Some RSDB companies possess a license under the Surface Waters Pollution Act (WVO). They treat their waste water in their own plant, after which the water is discharged to the sewer. Those plants that extract groundwater are licensed by the Provincial government.

From time to time other legal requirements can play a role. One RSDB plant in 2007 experienced the effects of the *Flora and Fauna Act* for species protection and the Protection of *Nature Act 1998*, as amended, for protecting natural areas. The reason was an expansion project, for which a pond would have to be filled in. The planning phase took a look at the possible occurrence of protected and/or rare plant and animal species. It turned out that there were no impediments to the plans from the protection angle, so an ecological working plan was drafted. The phased construction was intended to take account of the breeding season of certain species of birds, amphibian hibernation, and the trapping and re-release of fish.

Disaster management

If inspections show that permitted concentrations are being exceeded or under other irregular circumstances, the companies take immediate action to counter the cause. It is standard procedure to inform the licensing authority of the events and subsequent remedial actions.

In case of serious disasters, the plants have disaster plans ready according to the requirements of ISO 14001. The personnel are all instructed in these plans and internal company first-aid assistants are trained.

The environmental care system also requires that a record be made of environmental near-incidents, since they also provide an insight into the company's performance.

5.2.3 INSTRUMENTS AND ORGANISATION

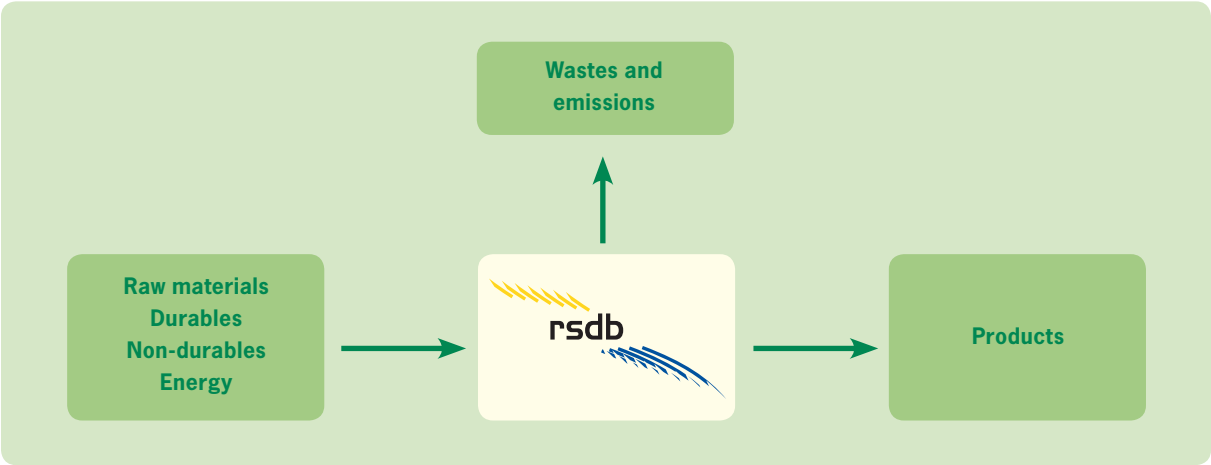
Certain environmental developments are initiated and facilitated by the RSDB Environmental Staff Department. A number of group-wide ambitions have been formulated and major contracts are signed, for waste removal among other things, on behalf of the associated companies. The RSDB companies, as associates within a single printing group, can also quite openly compare the solutions they have chosen and their environmental performance. This type of benchmarking helps to improve their performance. Externally, RSDB safeguards its own interests and those of the printing industry in general. By participating in a variety of national and international discussions, RSDB can intervene to change legislation and regulation at an early stage.

Ecobalance

The Ecobalance was introduced to all companies throughout the group in 1994. This is a mass balance that charts all incoming and outgoing material flows, plus energy and water. The data produced by RSDB are co-ordinated and validated by TME – the Institute for Applied Environmental Economics – which specialises in the economics and management of the environment and natural resources. The Ecobalance presents the flows in the individual RSDB plants and the group as a whole. It is not just a record. If performance is accurately captured in terms of numbers, it becomes possible to set precise goals with plans for action, the results of which can also be precisely measured. Because the Ecobalance reveals the companies' complete material budget, it can be used not only to manage emissions but also to help in the efficient management of all materials in the production process.

The data for the Ecobalance are collected continuously, so a very frequent, up-to-date picture of performance can be generated, should that be needed to keep a running check on certain individual developments.

This complete mass balance gives the RSDB companies an environmental picture that goes far further than is prescribed under an environmental care system. The basic principles underlying the Ecobalance are shown in the diagram on page 60.



Environmental care systems

RSDB regards its companies' internal environmental care systems as an important means for implementing its environmental policy. An environmental care system (environmental management system according to the revised Dutch National Standard NEN-EN-ISO 14001: 2004) forms a coherent unity of policy, organisational and administrative regulations by which the companies give form and content to their environmental management structure. It is precisely such systems that allow environmental management to be done systematically according to well-described, fixed procedures. Moreover, the system demands that the companies improve continuously, according to a cyclic process of goal setting, action, and evaluation, resulting in the setting of new goals.

The environmental care system is concerned with all environmentally-linked business activities. Among other things, it sets down operating procedures related to environmentally-conscious purchasing, the selection of suppliers and processors in the chain, working with minimum stock levels, methods for storing and labelling process materials, good housekeeping (the correct use of materials), and neatness on the shop floor (tidying clutter, separating waste according to procedures). Other elements of the environmental care system relate to getting the workers more involved, environmental training, and communicating about the environment, both internally and externally.

ISO 14001: 2004 also calls for attention to environmental aspects that can be indirectly influenced, such as the origin of timber used for papermaking, the way waste is treated and the optimisation of recycling.

For environmental activities further on in the chain, such as suppliers, including waste processors, RSDB companies can call on the results of a thorough, central assessment of all suppliers. These data are maintained in a suppliers' database, available on the RSDB environment site, which the individual companies can access via the group's intranet. Besides supplier data, this site also contains other relevant environmental information (on ink and paper, for example), environmental licences, the Ecobalance, all certificates, and all annual environmental reports.

RSDB companies set up their environmental care systems according to the international NEN-EN-ISO 14001: 2004 environmental standard and have them certified by an external auditor. Once certified, the care system is regularly re-audited to determine whether it still merits the certificate. Internal audit teams made up of the companies' own staff are also active, partly in view of the recurrent external audits, using an audit programme that checks all environmentally-related procedures and working documents at least once every three years. In principle, an auditor participates in the audit team for a limited period, after which he/she is succeeded by another employee. The audit team is put together so that all sectors at all levels of a plant are represented. This creates a wide area of support for the environment among all employees.

Management and the works councils receive periodic reports on environmental matters. An important aspect of the reporting involves the findings of internal and external audits. Besides employees who are directly involved with production, some supervisors also take their place in the internal audit teams.

In RSDB companies that also have an operational quality assurance system, the two audits are combined. Quality and the environment are in fact two sides of the same coin: perfect process management is the route to both excellent products and environmental benefit.

Company environmental plans and annual environmental plans

At the individual RSDB company level, concrete environmental policy is developed in the form of company environmental plans and annual environmental plans. These plans are based on the Environmental Policy Agreement (see p. 57). The company environmental plans, which contain key indices, tasks and goals for a number of years, are drafted in part for and after discussion with government. The plan gives the company an insight into expected business processes and possible environmental impacts, expected business developments and

their environmental effects, environmental standards with which the company must comply, and the tasks and targets of its environmental policy.

The individual plants' environmental plans underlie the annual environmental plans (sometimes as part of a combined plan covering Quality, Health & Safety and Environment), allowing the companies to set down their goals and tasks for the coming year and the concrete actions they intend to undertake. The execution of the plan is monitored throughout the year.

Environmental co-ordinator

Each web plant has its own environmental co-ordinator (sometimes in the form of a KAM – Quality, Health & Safety and Environment co-ordinator), who has an important internal advisory function, including the drafting and establishment of procedures. Other functions include compliance with environmental legislation, monitoring this compliance, and maintaining the environmental care system. The co-ordinator also functions as a checkpoint for assessing the environmental safety of incoming materials. Another task is assessing the environmental aspects of suppliers of products and services. Besides that, time is devoted to conducting the checks and inspections of the various departments and guiding the internal audit teams. Checks and inspections are concerned with safety, neatness and orderliness, the conduct of improvement campaigns and recording their results. The co-ordinator also monitors the progress of projects conducted under the annual environmental plan, as well as the conduct of measurements, inspections, calibrations, etc. as required under legislation. The co-ordinator also provides instruction and internal training on environmental aspects.

The size of the two sheetfed plants of Roto Smeets GrafiServices means that the environmental co-ordinator function there is undertaken by company management.

Within RSDB as a whole there is a quarterly environmental co-ordinator meeting, at which all environmental co-ordinators from the various RSDB printing plants discuss developments, problems and their solutions in their own areas, exchanging knowledge and experience.

The environment is actually placed on the agenda of everyone in the group thanks to discussions in the departmental consultations. The individual companies have provided digital access to all relevant environmental information for all employees (see Environmental Care System, p. 60.

Complaints management

Complaints are an indicator of the relations between the plants and their surroundings. They are also valuable signals for the improvement of business operations. The plants take pains to treat complaints seriously, the keywords being: recording, personal resolution and follow-up. The procedure whereby environmental complaints arrive or are collected at a single point has been set down in writing. In practice, any complaints that are made to the local authority are usually passed straight on to the company, so that the company itself can respond as quickly as possible.

Training

The plants train employees as internal auditors. Internal inspections of the environmental care system ensure that the system can successfully pass the external audit for recertification. In some cases, according to the specific situation in a given plant, environmental training courses are bought in from outside. These include courses to make all personnel sensitive to environmental aspects, so that they too will be able to indicate points for improvement. 'The Environment' is thus steadily losing its status as 'something else to look at' as it becomes part of the regular training given, for example, to new printers when they enter employment with RSDB and is incorporated in standard operating procedures.

5.2.4 TARGETS, MEASURES AND PROGRESS IN 2007

RSDB as a whole

For RSDB as a whole, attention to the environment in 2007 can once again be summarised as striving to perfect process management. Apart from improving production performance, this has a variety of positive effects on the environmental burden imposed by the production process, such as energy consumption, paper loss, ink usage, or the emissions of volatile compounds from the moistening water additives that ensure the interplay between water, ink and printing plate.

It has been RSDB policy for years that all printing plants must have a certified environmental care system. To retain their certification they have to undergo regular, successful environmental audits. External and comparable internal audits were thus again a major topic in RSDB companies in 2007.

Other

Besides the group-wide ambitions, more company-specific targets and measures held at local level, as described in the plants' annual environmental plans for the reporting year. These include, for example, added attention to energy savings,

since the replacement and relocation of plant and equipment due to company expansion is a first-class opportunity to invest in this area. Or extra training for the internal auditors, including the necessary communications skills, so they can conduct their audits even more efficiently. Other examples include the modernisation and automation of waste water treatment plant control, image processing software that gives a further reduction in ink usage, and research into the possibility of using combined heat and power, using the waste heat from afterburners, and further optimisation of the toluene recovery plant.

5.3 RSDB Environmental Information

5.3.1 INPUT–OUTPUT

The environmental data presented here relate to the operational consumption of energy and water, usage of process materials, wastes (solid wastes, waste water, emissions), and possible nuisance to the surroundings. All insofar as they are directly related to the activities of RSDB plants. Indirect environmental aspects also play a role, of course, such as the production of the chemicals that RSDB purchases or the further treatment of company waste. The environmental burden produced elsewhere in the chain forms no part of the Ecobalance (see p. 59) and has not been incorporated in the data presented below. This does not mean, however, that RSDB's concern starts only upon purchase and stops after the waste leaves the plant. RSDB is actively concerned with other parts of the chain by imposing demands on both suppliers and waste processors. Such care is also an element of the ISO 14001: 2004 environmental care system

Below we present first RSDB's 'output' data, in terms of waste water, atmospheric emissions and waste, as well as on nuisance and environmental incidents. These are followed by data on the consumption of energy, water and other materials on the 'input' side. The figures come from the RSDB Ecobalance, which is derived from a careful record of all inflows and outflows. It should be noted, however, that not all flows are easy to weigh. The release of volatile compounds from certain formulations, for instance, has to be assessed from a given percentage evaporation. In such cases we have to rely on theoretical and empirical knowledge, verified as far as possible by tests and measurements made on the shop floor.

The data relate to the RSDB plants in the Netherlands. The performance of the printing plant in Hungary (85% owned by RSDB) – a company that has completely fulfilled all Hungarian environmental standards since it was rebuilt in 2002 – will be incorporated in the Ecobalance as soon as it becomes wholly owned by RSDB.

The presentation shows the 2007 data in every case accompanied by data from previous years. The graphs display annual figures from 2003 on. Data for different years, however, cannot be simply compared. Changes of production volume naturally influence both input and output. For that reason, all data were recalculated in terms of quantities per tonne of product to give a comparable index. This 2007 report also works with index figures, but the approach has been slightly amended. Absolute emission and consumption figures have now been recalculated in terms of tonnes of paper passing through the presses, in other words, paper *input*. RSDB has been considering this idea for some time, since it delivers a clearer index. It makes a difference in terms of the amount of 'product' leaving the plant's gates if the finishing (including cutting the printed sheets to size) is done in-house or off the premises. The absence of finishing (no guillotining means more 'product') exerts a positive influence on the old indices. Basing the indices on paper input eliminates this effect. Now we have started working with these reframed indices in 2007, we have also recalculated those for previous years according to tonnes of paper input.

There has been a discussion at RSDB for some time now about whether it might not be better to relate the indices to the paper *area* rather than unit weight. Besides the environmental performance, the index figures can also be influenced by the order profile (number of colour changes, paper formats, etc.). It was not uncommon, for instance, to use thinner paper in 2007. Every tonne weight of paper that goes through the plant thus represents a far greater printed area, so the environmental performance per tonne of product then threatens to change accordingly. It turns out, though, that it is impossible to compute productivity in square meters, especially for the offset plants. RSDB will thus for the time being still continue to base its calculations on unit weight of paper.

5.3.2 EMISSIONS TO WATER

The cooling water used in RSDB plants does not come into contact with the production process and thus remains free of the substances used in the process. Rainwater that flows into the sewer from buildings and paved areas is also relatively clean in principle. Most important is the water polluted from housekeeping and process operations in the RSDB plants.

The plants have equipment that allows them to comply with the terms of their licences as regards waste water quality. One

plant has for some time been in consultation with the water authority on discharge standards, in particular the *chloride* content of the discharge water. It is expected that a new permit (to include requirements under the IPCC guideline) will set down new emission standards, including one for *chloride*.

Waste water in all plants receives attention as part of our continuous efforts to improve the production process.

5.3.3 EMISSIONS TO AIR

Roughly 28% of the total quantity of VOC (Volatile Organic Compounds) in 2007 consists of isopropyl alcohol (IPA). Other VOC emissions relate to volatiles from other moistening water additives, cleansers, and toluene from printing ink, together making up approximately 58% (2007) of the total mass of VOC.

The trend of previous years has continued in 2007 as VOC emissions per tonne paper input have declined yet again, by 45% in total compared to the 2003 level.

In the offset plants, IPA and other moistening water additives account for approximately 89% (2007) of all VOC emissions. The measures taken to reduce IPA consumption in the offset plants led in the late 1990s and early 2000s to roughly a halving of the emission of this compound per tonne of paper input to these plants. In recent years we have been exploring the bottom limit of this IPA dosage. In the RSDB offset plants the use of IPA per tonne of paper input has declined slightly in 2007 in comparison with 2006 (3%), despite the fact that one plant had to operate at minimum IPA dosage (far below the legal limit) on a couple of presses, which they were actually operating alcohol-free, thanks to problems with the printing plate quality. It was also despite the fact that 2007 saw a trend towards using more wood-content paper. This type of paper, which is common in retail, absorbs more moistening water (with IPA).

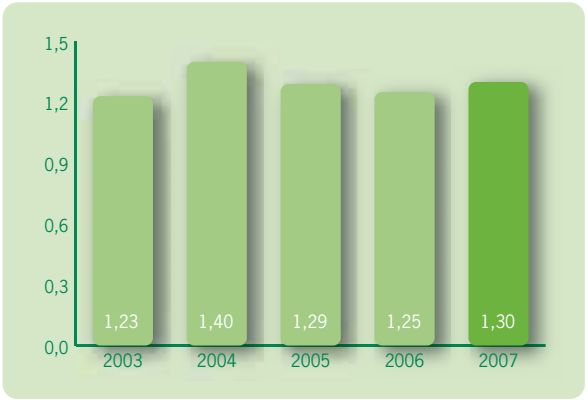
Aggregated toluene emissions per tonne of paper input to the rotogravure plants declined by around 22% in 2006. This had a number of causes: the deployment of a new press, use of high-pigment inks, and concentration controlled air extraction. High pigment inks have a higher solids content (the pigment), so the ink layer laid down on the paper is thinner than it used to be, which in turn means that less toluene flows to the recovery unit. This delivers not just lower toluene emissions, it also lessens water and energy consumption because less toluene has to be recovered from the extracted air. In 2007, concentration controlled air extraction around the presses was taken further, so the extraction depends on the toluene concentration in the printed matter. Toluene recovery was also further optimised in the reporting year.

Finished product emissions

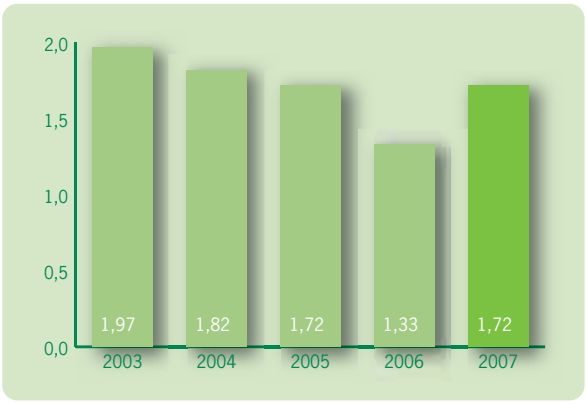
Once the printed matter is finally ready, it can still give rise to minor VOC emissions. The rotogravure ink still contains toluene, which is gradually released. This occurs first of all in the plant, where the work stands ready for dispatch, during transport or even further down the line. Within RSDB this emission is being dealt with by modifying the ink formulas to influence the moment of toluene release, so that it is freed during the production process, where it can be captured, or by passing the printed matter through an autoclave, which is a closed space held under greatly reduced pressure, which forces toluene to evaporate from the printed paper. This extra stage gives re-usable toluene and prevents its 'disappearance' down the line. In this way the toluene content of the printed paper meets the stringent requirements that some (especially the Scandinavian countries) demand.

RSDB's emissions of VOC to air (kg/tonne paper input), 2003–2007

Recyclable waste materials



Hazardous waste



General process waste

5.3.4 WASTES

RSDB wastes (in kg/tonne paper input) 2003–2007

Recyclable wastes comprise mainly paper and card.
The quantity of recyclable waste per tonne of paper input was higher in 2007 than 2006, influenced mainly by paper losses. Just as in previous years, in 2007 RSDB plants have devoted themselves to further cutting paper losses (paper used in the run-up phase, when no usable product comes off the press). This index, though, is also influenced by other, more incidental factors, such as rolls of old stock that were disposed of at one plant. In 2007, too, recyclable waste was released as a result of rebuilding. Finally, the index is influenced by efforts at waste separation, partly by retaining bundle banding for recycling, thus keeping it out of the 'general process waste' stream.

The quantity of general process waste per tonne of paper input rose above the 2006 level. The plants worked continuously to limit the amount of process waste and have been successful in their efforts. Better waste separation at source, such as collecting synthetic oil and bundle banding for recycling, gave good results at a number of plants. Nevertheless, it was unusual circumstances that governed the picture. For example, one plant produced a large amount of packaging timber, used to protect parts of a new press. Furthermore, many plants were rebuilding internally, and the waste situation at one plant was drastically influenced as a sealing, banding and addressing business was once again brought within the gates.

Work is always continuing on cutting waste by separating and recycling as much waste as possible.

The quantity of hazardous waste per tonne of product in 2007 was a little higher than in 2006. This index is not entirely in RSDB's hands. For instance, one plant processed a larger number of small orders, one of the effects being that more empty ink cans had to be taken away as hazardous waste.

Environmental burden?
The data on RSDB's waste streams and emissions do not in every case represent the actual burden to the environment. 'Hazardous waste', for example, is obviously not introduced into the environment but is carried away for processing. The waste water that the plants discharge to the environment also undergoes final treatment in the sewage operator's plants.

Nevertheless, RSDB's self-assessment takes full account of the quantities of these wastes produced in its output streams, regardless of the quantities produced. The Ecobalance does include a separate category for 'recyclable wastes' since these do not actually enter the waste stream but are re-used as raw materials.

Despite this caveat, as well as the accents laid on us by government (such as VOC emissions), the entire mass balance is important for RSDB, in terms of its significance for our active concern for the environment and an efficient usage of materials and energy throughout all sectors of our business operations.

5.3.5 ENVIRONMENTAL INCIDENTS, NUISANCE

A number of plants experienced incidents in 2007: leakage of ink into the sewers after a transport accident, oil leakage from a breakdown, damaged solvent bottles found in the chemical store, and minor fires on the presses.

Satisfactory disaster planning and clearing up operations meant that these incidents had little effect on the environment. Where appropriate, standing instructions were once again discussed with the workers involved.

In regard to government relations, it is worth reporting that the press fires mentioned above led to a prosecution. Even though the incidents were minor, the matter gave rise to a charge because some of them were not reported to the appropriate authorities thanks to a breakdown in communications.

During an integral audit of environmental legislation at another plant, the local authority determined that gas cylinders were not being stored entirely according to requirements (PGS 15). This has now been corrected.

In total, six external complaints arrived at three RSDB plants in 2007. Three of these related to a single instance and had to do with odour nuisance. In one of the cases a clear link could be made with the plant, and a breakdown in the afterburner turned out to be the cause. The necessary action was undertaken. A fourth complaint at the same plant related to noise nuisance, apparently due to a blocked filter in the finishing department. The system responded by switching extra vacuum pumps on line. This situation was remedied.

Of the other complaints, which arrived at two other plants, one was laid by a waste processor who complained about mild pollution of the waste in a timber container, and the other was an external complaint about noise. Additional information from the complainant allowed the source of the noise to be traced. When a web press was started up, noise 'escaped' for a few minutes together with the air that was exhausted directly to the atmosphere at that time. Immediately thereafter, as normal production commenced, the situation changed as the air was redirected to the afterburners. Special measurements were made during this stand-by phase which lead to a measured noise reduction of 20dB(A) during the 1-2 minute stand-by fase.

5.3.6 SOIL QUALITY

To protect the soil from pollution, the plants conduct regular inspections covering such matters as the liquid permeability of floors and the state of underground tanks. They also safeguard soil quality by monitoring it at strategic points.

Two plants still have to do with pre-existing soil pollution. In one case preparations have been started for a clean-up operation planned to start in 2010: agreements on the division of costs between government and company and research, combined with several pilot trials, to gain a better insight into the limits of the pollution and the expected effects of the intended clean-up methods. A second plant is still experiencing the after-effects of a clean up operation at one location in 2006, with another spot of mild pollution found and cleaned up in the same year. Groundwater quality is currently being monitored at both locations in Deventer.

5.3.7 CONSUMPTION DATA

Energy

The energy consumption figure includes all energy consumed: electricity, gas and district heating. Just as in 2006, 2007 saw a drop in energy consumed per tonne of paper input. We can see a cut of 12% below the 2003 figure. This index is sensitive to the trend towards printing on thinner paper, which leads to a larger number of press rotations (machine hours and thus energy consumed) per unit weight of paper that enters production. In 2007, however, RSDB has been able to compensate thanks to constant attention to energy consumption. Great strides have been made here, as by investing in concentration controlled extraction above the presses and the use of high-pigment inks (less extraction power needed due to lower solvent concentrations). Further optimisation of toluene

RSDB's energy consumption (Gigajoule/tonne paper input) 2003–2007

RSDB's water consumption (m^3/tonne paper input) 2003–2007

RSDB's consumption of ancillary materials (kg/tonne paper input) 2003–2007

RSDB's consumption of process materials (kg/tonne paper input) 2003–2007

recovery in rotogravure, paper shrinkage compensation (see p. 56) and revealing the use of stand-by electricity (and cutting it back) delivered considerable savings. Relatively minor, but nonetheless important matters also received attention, such as switching off compressed air if production is still for a time in afterpress.

Water

Water consumption per tonne of paper input has declined slightly since 2006. Since 2003 it has dropped by 20%.

Ancillary and process materials

Besides raw materials (chiefly paper and ink), RSDB distinguishes between ancillary and process materials.

Ancillary materials include such things as binding material, such as wire and glue, other adhesives and packaging, which make up very roughly 95% of the total weight of auxiliary materials used within RSDB. In 2007 the consumption of ancillary materials per tonne of product declined a little from 2006. This goes against the tide of rising demand for printed matter packaging. RSDB plants do attempt to counter adverse trends, partly by encouraging the use of multi-trip pallets, using thinner film and improvements in the packaging line (such as automatic control and even more custom-tailored packaging). The plants are dependent on their customers' demands, but prefer to search together with them for savings options.

Process materials include chemicals (about 35% of the total mass), plates and the associated developer and fixer, cleaning cloths, cleansers and disposable packaging of products supplied to us. Process material consumption is strongly influenced 'from outside' as a result of the order package and order portfolio (colour use, colour changes, print run, paper types, etc.), since these determine the number of plates and the quantity of cleaning materials needed. If process management remains at a constant level, then a trend towards smaller print runs and the selection of thinner types of paper leads (among other things) to a larger number of offset plates per tonne of paper input.

For a number of RSDB plants, the effects of market demand in 2007 outweighed the beneficial effects of their own efforts at economising on process material consumption. The RSDB plants remain committed to an aware, efficient use of process materials.

5.4. Environmental Policy Statement

RSDB views environmental policy, just as much as a concern for safety, health and welfare, as an integral component of sound business policy. The group is also involved with society as a whole and has a responsibility to its employees, customers and the public at large.

The group's environmental policy is concerned to prevent pollution of the air, water and soil and to limit nuisance from noise and other causes. The environmental effects of the use of raw materials and energy form a central theme within this policy.

The actual, effective implementation of this policy involves the use of an internal Environmental Care system that fulfils the following criteria:
- The system satisfies the requirements set down in the ISO 14001:2004 standard, including the related certification, to guarantee a satisfactory, responsible place for the environmental care system within the entire company's operation.
- The system is suited to the nature, size and environmental consequences of RSDB's activities.

This internal Environmental Care system has been set up to achieve the following objectives:
- Compliance with the provisions set down in environmental legislation and anticipation of new legislation, both national and European.
- Building up an adequate set of instruments at plant level to allow the total environmental burden to be controlled and limited.
- Suffusing the entire organisation with the need to limit as far as possible the adverse effects of business operations on the environment, especially in regard to emissions and waste streams. A major part of this endeavour is optimising the effective utilisation of raw materials and energy.
- Adequately informing those involved, both inside and outside the company, about the degree of environmental burden and the improvements achieved.

RSDB actively seeks less environmentally burdensome business processes.

RSDB is committed to a continuous effort to improve its environmental performance.

RSDB actively supports and encourages those developments in the paper industry that lead to the use of environmentally friendly raw materials and the re-use of waste paper.

RSDB monitors the environmental history of the paper it purchases. Important aspects in the selection of paper suppliers are sustainable timber logging and a record of the origin of all fibre material. This guarantees that the timber is taken from sustainably managed forests.

RSDB actively seeks to eliminate or restrict as far as possible any adverse side-effects of its products, packaging or services– whether related to the environment, health, or welfare.

Insofar as it lies within it ability, RSDB shall take pains to identify, limit and remediate such environmental damage (soil pollution) as may have been caused on its premises in the past.

Where possible RSDB shall do more than the law demands, but all voluntary measures must show a healthy balance between the effort made and the result achieved. Priority in this regard shall be given to those environmental measures that also impact other areas, such as safety, health and welfare, quality, and efficiency.

Internally, RSDB shall ensure that the necessary information is provided to all employees. The group shall also participate in, support and encourage the necessary training courses.

Our employees support the objectives set out above and are completely aware of their own responsibilities in this regard.

RSDB has operationalised an Ecobalance for the entire group. This instrument uses a mass balance to provide an insight into the environmental effects of all processes in the company. This annual balance provides a sound management basis to:
- establish and reveal the potential for improvement, and
- determine and implement improvement activities. It is therefore an excellent aid, revealing our continuous efforts to improve our environmental performance.

RSDB's involvement with the environment goes back years. We've kept up our annual Ecobalance since 1994, which allows us to chart all material inflows and outflows, plus energy and water. That allows us to show the improvements we've achieved and set precise targets, with plans for meeting them and measurable effects. Since 2000 RSDB has also issued an Annual Environmental Report, setting out our environmental performance in the past year.

Our Environmental Policy Statement explains that we monitor the environmental history of the paper we purchase. When selecting paper suppliers we look at sustainable logging and the records made of the fibre content's origin. What this means is that we demand that our suppliers use timber to make their paper that comes from well-managed forests. RSDB took an extra step in 2006, when all RSDB printing plants received the FSC Chain of Custody Certificate. What this means is that each printing plant can show what has happened to the paper during production and, for example, can guarantee that production has been strictly separated from other paper types. Clients for products produced by sheetfed and web-based printing can have their order produced according to FSC guidelines. Their printed products are allowed to carry the FSC Seal. The FSC Chain of Custody is the link between responsible forest management and the consumer. The principal goal of FSC certification's to ensure that FSC certified material can be tracked right though the production chain. This way the end user is able to choose FSC certified products with the guarantee that the material's origin has been verified."

Jeroen Voges, Quality Health & Safety and Environment Coordinator Roto Smeets Utrecht FSC Administrator Roto Smeets