



ROYAL UNIBREW

# ENVIRONMENTAL REPORT 2005



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*Albani*

**FAXE**

**CERES**



The Environmental Report has been checked and certified by the Danish Standards Association. The Environmental Report has been verified in accordance with the EMAS - EU Regulation EEC no. 761/2001 of 19 March 2001 on organisations' voluntary participation in a joint Eco-Management and Audit Scheme (EMAS).

The Danish Standards Association has performed environmental certification of the three Danish breweries in accordance with the international standard for environmental management DS/EN ISO 14001:1996. ISO – The International Standard Organisation – is an international association of national standardisation organisations. ISO 14001 is an international certification standard for environmental management and therefore applies to most of the world.

The environmental Report for the 2006 financial year will be issued in April 2007.



**Poul Møller**  
CEO



**Povl Friis**  
Technical Director

## PREFACE

Royal Unibrew A/S is a brewery group comprising both Danish and foreign breweries. This Environmental Report concerns the three largest Danish breweries of the Group, which are Faxe, Ceres and Albani. The purpose of our Environmental Report is to provide shareholders, employees, authorities, neighbours and other stakeholders with the opportunity of gaining insight into the overall environmental work of Royal Unibrew. The Faxe and Ceres breweries have enjoyed environmental certification under ISO 14001 for 8 years.

After 2000 when Albani joined Royal Unibrew, we directed targeted efforts at implementing the quality and environmental management system of Royal Unibrew at Albani. This objective was achieved through quality certification in 2002 and environmental certification in March 2003.

We are pleased in this Report to present new, satisfactory results within efficiency enhancing and investment in cleaner technology, electricity, heat and water conserving measures, minimisation of wastage, enhanced environmental awareness and increased focus on green purchases. Royal Unibrew has decided to maintain its focus on the positive developments in respect of electricity, heat and waste water.

Poul Møller

The target with respect to health & safety is a reduction of the accident frequency and absence due to accidents. We are very pleased to note that we have reduced the total number of accidents resulting in absence from 39 in 2004 to 22 in 2005. Each single accident at work is one too many, but we have definitely taken a big step in the right direction.

Our efforts to achieve more efficient utilisation of our invested resources and continuous minimisation of all key environmental risks are enabled through our day-to-day environmental work in which efficient environmental management is an important competitive parameter.

The Environmental Report provides information on our environmental management system and explains how the breweries work to reduce environmental impacts and create a safe working environment for their employees.

You may obtain a copy of our Environmental Report by contacting Royal Unibrew A/S, or the Report may be accessed at our website [www.royalunibrew.com](http://www.royalunibrew.com).

Povl Friis

# INTRODUCTION

Royal Unibrew A/S is Scandinavia's second-largest brewery group comprising four Danish and two Lithuanian breweries, a soft drinks producer in Latvia and two breweries in Poland. Furthermore, the Group has sales companies and associates in a number of countries. The Danish breweries are Albani Bryggerierne, Ceres Bryggerierne, Faxe Bryggeri and Maribo Bryghus. The Lithuanian breweries are Taurus and Kalnapilis. The Latvian entities are the Lacplesa Alus brewery and the soft drinks producer Cido, and the Polish breweries are Brok and Strzelec.

Among the associates is Hansa Borg Bryggerierne in Norway, in which Royal Unibrew A/S holds a 25% interest and which also produces some of the Group's products under licence. Furthermore, the Group's products are produced under licence in the Caribbean and Africa. Royal Unibrew has approx 2,200 employees world-wide. Royal Unibrew A/S exports to approx 65 countries throughout the world.

## THE FOLLOWING ROYAL UNIBREW BREWERIES HAVE OBTAINED EMAS REGISTRATION:

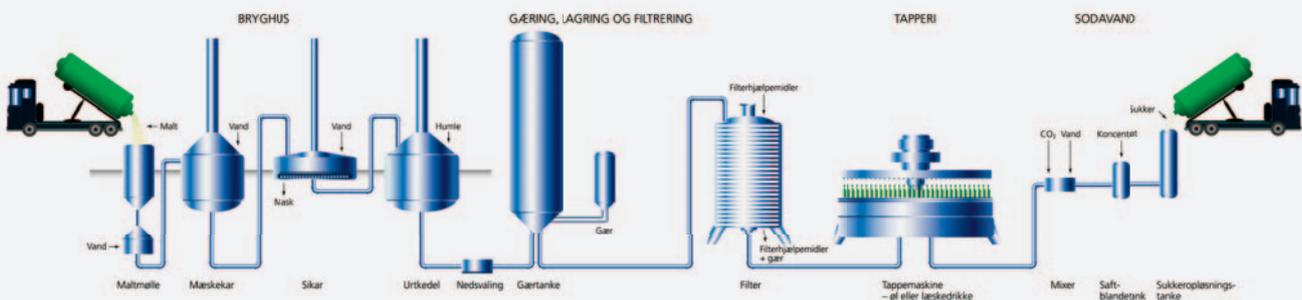
- Faxe
- Ceres
- Albani

## THE OTHER ROYAL UNIBREW ENTITIES ARE NOT COVERED BY THE ENVIRONMENTAL CERTIFICATION AND THE EMAS REGISTRATION. THESE ENTITIES ARE:

- Maribo Brewery (Denmark)
- The Lacplesa Alus brewery and the soft drinks producer Cido in Riga (Latvia)
- The Vilniaus Taurus brewery in Vilnius and the Kalnapilis brewery in Panevėžys (Lithuania)
- The Brok Browary brewery in Koszalin and the Strzelec Browary brewery in Jdrzejow (Poland)

## MARIBO BRYGHUS

Maribo Brewery has for a number of years recorded its consumption with environmental impact in key areas. Through environmental targets and environmental action plans, the brewery has worked determinedly to improve the rate of utilisation of the resources applied and to reduce emissions and discharges to the surrounding environment. The information has been published in the green accounts of the brewery, which may also be accessed at [www.royalunibrew.com](http://www.royalunibrew.com).



## PROCESS

The brewing of beer is based on a very traditional method, but the part-processes of the brewing cycle are highly modernised and streamlined. The production of beer involves brewing, fermentation, storing and filtration. After these processes, the beer may be bottled, canned or casked and stocked, ready for

delivery. Soft drinks production involves an accurate mixture of raw materials in the form of concentrates, sugar, water and carbon dioxide, which is bottled or canned or sold as concentrates primarily to the hotel, restaurant and catering segment.

### TAURAS AND KALNAPILIS

Since Royal Unibrew acquired these breweries, focus has been on minimising their resource consumption. The two breweries perform continuous control and optimisation of resource, water, electricity and gas consumption as well as monitoring discharges to the environment. Meters have been installed and are read daily, and consumption figures are reported monthly.

### LACPLESA ALUS AND CIDO

Lacplesa Alus and Cido have appointed environmental managers responsible for ensuring compliance with existing national environmental legislation in order for smoke, noise and waste water emissions, etc to comply with regulatory requirements. There is also focus on minimising resource consumption. Waste is separated into several fractions with a view to recycling.

### BROK AND STRZELEC

At the two new breweries in Poland, Brok and Strzelec, efforts have been directed in 2005 at minimising the volumes of waste water, which is measured by both quality and volumes. All environmental targets have been met; for this purpose, action plans and monitoring are important tools. Continuous efforts are directed at minimising waste water volumes and emissions.

### PRODUCTS

The business activity of Royal Unibrew is the production and marketing of beer and malt and soft drinks. The Group's products are marketed and sold nationally and are exported in original containers. Well-known brand names include Royal, Faxe, Ceres, Thor, Albani, Vitamalt, Faxe Kondi and Nikoline. Furthermore, our range includes a number of private brands and licence brands such as Heineken, Pepsi, 7UP, Aqua Minerale, Evervess and Mirinda.



## DIRECT ENVIRONMENTAL IMPACT

The environmental impact of the breweries is characterised by the use in production of large volumes of containers, packaging and vegetable raw materials, substantial energy and water consumption and the use of lye (NaOH) for the cleaning of processing plants. All breweries discharge waste water containing organic matter which is transformed and cleaned at municipal waste water treatment plants without problems.

The breweries have very efficient waste separation at source, which means that more than 90% of solid waste is recycled or sold as by-products. The large fractions that are sorted and recycled are glass, aluminium, iron, cardboard/paper and plastic. By-products are primarily mash and yeast cream. Mash is the indissoluble parts from the brewing process.

Finally, there is the special issue that the breweries are situated in urban areas. Noise is therefore a significant environmental issue. In relation to health & safety issues of the breweries, accidents have been given priority as a target area that receives focus in the environmental management system combined with work place assessments.

In the past years, focus has been on areas like electricity and heat consumption, waste water discharges, COD (expresses organic matter content of waste water) and accidents. The ratios between heat and electricity may be changed depending on the rate of heat recycling. In order to obtain an improved basis of comparison between the individual breweries, it has therefore been decided to focus on total energy consumption, not on electricity and heat consumption separately.

### IN THE PERIOD 2005 - 2007 (BOTH YEARS INCLUDED), THE BREWERIES WILL FOCUS ON ACHIEVING ENVIRONMENTAL IMPROVEMENTS IN THE FOLLOWING TARGET AREAS:

- Reduction of energy
- Reduction of waste water
- Reduction of COD
- Reduction of accidents

The above areas are important focus areas to the breweries because they involve large consumption, large wastage, great impact or are subject to statutory requirements.

In addition to the breweries' overall environmental targets, it has been decided to supplement the targets for 2006 by project targets in selected target areas.

## DEFINITION FOR CALCULATING RATIOS

In 2005 Royal Unibrew decided to change the method of calculating ratios in order to be able to benchmark against other breweries to a higher extent. The current definition is: [Consumption/hectolitre output] with hectolitre output equalling hectolitres bottled/caned + hectolitres delivered by road tanker.

## INDIRECT ENVIRONMENTAL IMPACT

Indirect environmental impacts are issues that we, as an organisation, do not fully control, which arise throughout the product life cycle from "cradle to grave". Based on generally accepted life cycle assessments of beer and soft drinks packaging and containers, the most significant indirect environmental impacts are related to the choice of packaging and container materials, the weight of disposable containers and the use of disposable containers in export markets. Furthermore, environmental impacts from sub-suppliers and distribution of goods are significant. Royal Unibrew A/S seeks to manage these indirect impacts through its environmental management system.

## ENVIRONMENTAL MANAGEMENT SYSTEM

Responsibility for the environmental management of Royal Unibrew A/S is placed with the Executive Board, and more specifically the technical director who is the chairman of Royal Unibrew's environmental steering committee. The environmental management system is structured through common policies, objectives and procedures for Royal Unibrew combined with the individual objectives, action plans and instructions of the breweries.

In 2005 the translation of manuals and procedures from Danish into English in the management system has been initiated. This work is expected to be completed in early 2006.

The production management of the breweries is united in an environmental group which on a monthly basis evaluates targets and action plans, considers new ideas for environmental improvements and contributes towards ensuring efficient environmental management. Responsibilities and competence relating to the environment and health & safety have been delegated to key employees in order to ensure continuous focus on key environmental issues.

# ENVIRONMENTAL POLICY

It is the objective of Royal Unibrew A/S to develop and produce beer and soft drinks taking into account consumer and social requirements and expectations in terms of environmentally sound products and production. The environmental policy applies to the breweries Faxe, Ceres and Albani and covers the following items:

## 1.

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We shall develop and maintain an environmental management system that will always qualify for ISO/EN 14001 certification and shall on an annual basis publish an environmental report registered under the European Union Eco-Management and Audit Scheme, EMAS.

## 2.

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We shall manage and evaluate on a continuous basis the key environmental impacts of current operations and planned activities. We shall establish annual environmental targets for selected target areas, taking into consideration financial and technical capabilities, aiming at:

- preventing pollution through the use of cleaner technology;
- reducing water consumption, waste volumes and sewage load;
- developing efficient energy management and improving energy efficiency;
- developing efficient waste sorting in order for as much waste as possible to be recycled.

## 3.

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We shall continue to comply with existing environmental legislation and to be at the leading edge of developments through open dialogue with local authorities and key stakeholders in respect of the environmental aspects of Royal Unibrew.

## 4.

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We shall seek to prevent unintentional environmental impacts through accidents, fire and operational failure and to update a contingency plan to ensure that any impacts are limited to the extent possible.

## 5.

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We shall inform, train and instruct our staff to handle their tasks within the environmental management system and to encourage environmental awareness in the organisation.

## 6.

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We shall seek by means of work place assessments to prevent accidents at work and to evaluate the accident statistics of Royal Unibrew as compared to the national accident statistics prepared by the Danish Employers' Confederation.

## 7.

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We shall map key indirect environmental impacts and seek influence on a reduction of these impacts.

## 8.

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We shall assess our key suppliers and sub-suppliers from an environmental point of view. In priority areas, Royal Unibrew will enter into a dialogue with the supplier and the sub-supplier on the environmental aspects of products and services.

## 9.

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We shall ensure that contractors working at the Brewery's sites have been informed of relevant environmental requirements of the environmental management system.

## 10.

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We shall inform the individual consumers and customers of environmental aspects of our beer and soft drinks by following existing rules of environmental product labelling.

# FAXE BRYGGERI

## TARGETS 2005-2007

The following targets have been established for the brewery:

- 10% reduction of energy consumption
- 10% reduction of waste water
- COD - the 2004 level to be maintained

## ACTIVITIES AND RESULTS

The environmental ratios for 2005 show environmental improvements achieved at Faxe within energy and waste water.

Electricity consumption per hectolitre output showed a 9.6% improvement in 2005 compared to 2004. Replacement of air compressor and the introduction of intelligent light control at the high storage facilities contributed positively to this reduction of consumption.

Heat consumption per hectolitre output was reduced by 13.1% from 2004, which is 3.1% above target. The reduction is primarily due to increased production volumes, but also insulation of heating pipes contributed to the result.

Total energy consumption for 2005 has been calculated at 87.5 MJ/hl, which is 7.4% below target for heat and electricity combined - and a total of 12% below consumption in 2004.

Waste water discharges per hectolitre output have been reduced by 0.5% from 2004. One contributing factor has been increased production, but also the new equipment for capturing carbon dioxide has resulted in a reduction of water content compared to previously.

COD volumes increased by 8.7% from 2004.

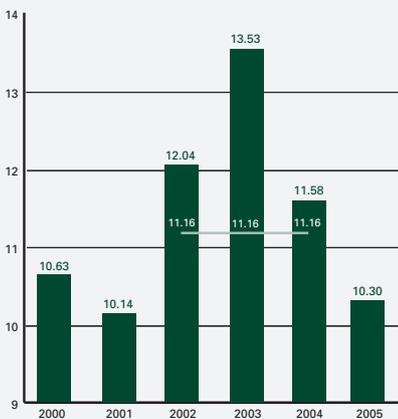
In connection with the new equipment for capturing carbon dioxide, the vaporizer was changed to the effect that the cold energy is now used in the cellars unlike previously when the vaporizer was located outside using the surrounding air. The target for carbon dioxide capturing in 2005 was an increase from 1.95 kg/hectolitre to 3.1 kg/hectolitre wort brewed. This target was achieved – 3.64 kg/hectolitre wort brewed, 17.4% better than targeted.

## IN THE SOLID WASTE AREA THE PERCENTAGE DISTRIBUTION IN 2005 AS COMPARED TO 2004 WAS AS FOLLOWS:

- Recycling: 85% of total volumes - 78% in 2004
- Incineration: 10% of total volumes compared to 16% in 2004
- Landfill: Volumes reduced from 6% in 2004 to 5% in 2005

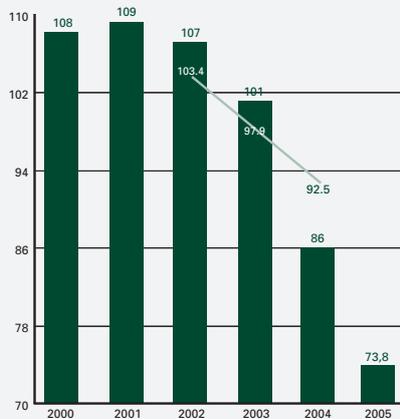
Volumes of waste for destruction remain below 1 ton as in 2004.

Electricity in kWh/hl



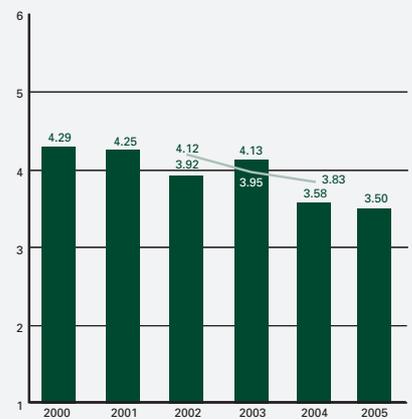
Key ratio Target

Heat in MJ/hl



Key ratio Target

Discharge waste water in hl/hl



Key ratio Target



**Faxe Bryggeri**

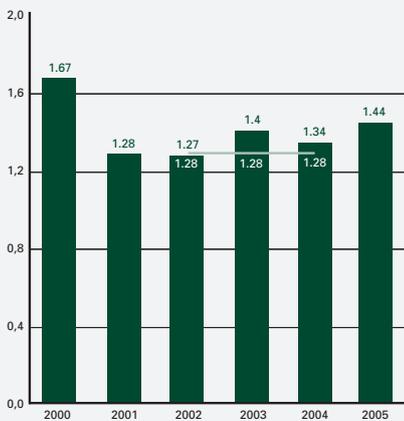
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NACE code: 15.96 – Breweries and

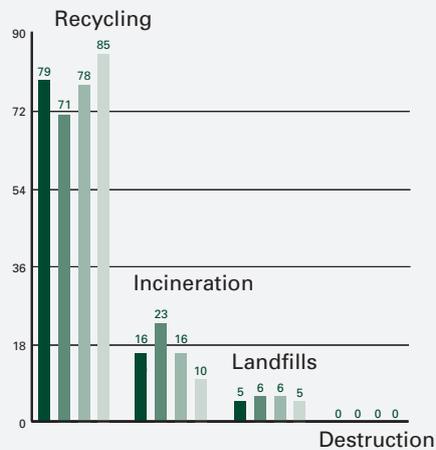
15.98 – Soft drinks production facilities

**COD in kg/hl**



Key ratio   
Target

**Solid waste %**



2002  2004   
2003  2005

# CERES BRYGGERIERNE

## TARGETS 2005-2007

The following targets have been established for the brewery:

- 3% reduction of energy consumption
- 3% reduction of waste water
- 6% reduction of COD

For the purpose of establishing the targets, the actual figures for 2004 have been used as a basis; however, electricity consumption for the brewery activities has increased by 0.3 kWh/hectolitre output due to changed production method introduced as of Q2 2005.

## ACTIVITIES AND RESULTS

The environmental ratios for 2005 for electricity, heat and waste water exceed the environmental targets for 2005 by 4-6%, which is primarily due to lower production than assumed.

Electricity consumption per hectolitre was in 2005 6.6% short of the environmental target for 2005. Specific electricity savings were achieved in 2005 through general optimisation at the bottling/canning facilities and by changed operation of the separator with start-up controlled by a frequency converter. In addition to the lower production, the increased electricity consumption is attributable to the establishment of increased slowdown at labelling machines, increased pasteurisation

in the summer of 2005 and increased electricity consumption for cooling in the summer of 2005.

Heat consumption per hectolitre was in 2005 5.2% short of the environmental target for 2005 and 4.3% short of actual 2004. In addition to lower production than expected, this is attributable to increased pasteurisation in the summer of 2005.

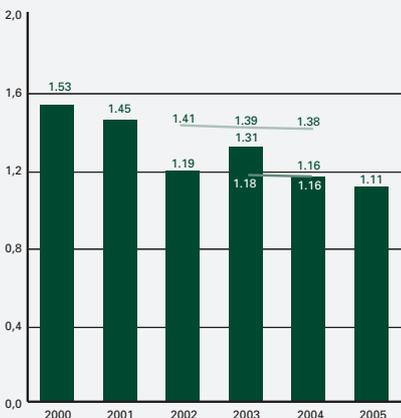
Waste water discharges per hectolitre were in 2005 4.6% short of the environmental target for 2005 and 3.4% short of actual 2004. Water savings were achieved in 2005 by separate measurement of water consumption for CIP and displacement at the individual lines and by close monitoring throughout the year. 2005 saw increased water consumption for brewing in connection with changed CIP procedures, increased pasteurisation in the summer of 2005 and the initial operation of a new yeast storage facility at the end of the year.

COD for 2005 was 4.3% below the environmental target for 2005 and 10.6% better than actual 2004. This result has been achieved through reduced beer wastage by way of targeted efforts in this area and is thus a continuation of the positive trend for 2004.

Ceres' total volumes of waste per hectolitre output were reduced by 9% from 2004.

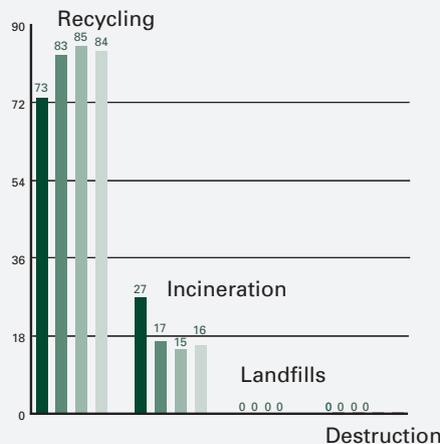
Solid waste for recycling was reduced by 10%, whereas solid waste for incineration was reduced by 5%.

COD in kg/hl



Key ratio   
 Target  Redefined target

Solid waste %

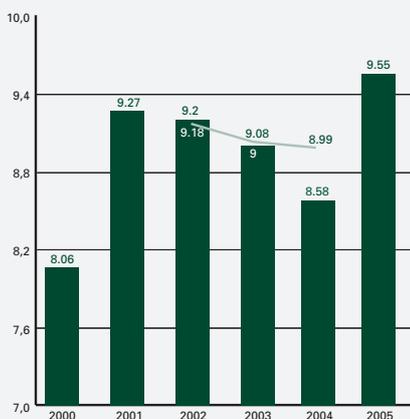


2002  2004   
 2003  2005



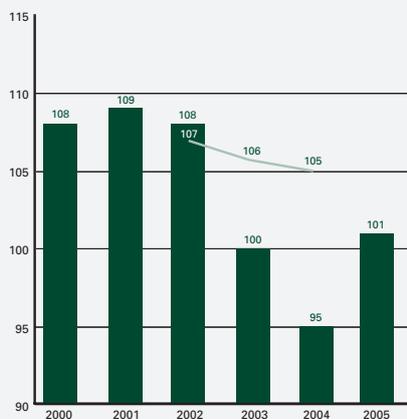
**Ceres Bryggerierne**  
 Ceres Allé 1 and 9  
 DK-8100 Aarhus C  
 NACE code: 15.96 – Breweries

**Electricity in kWh/hl**



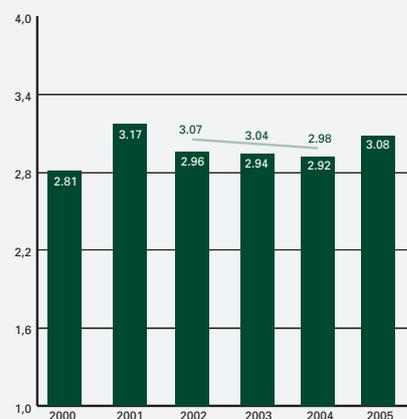
Key ratio ■  
 Target ■

**Heat in MJ/hl**



Key ratio ■  
 Target ■

**Discharge waste water in hl/hl**



Key ratio ■  
 Target ■

# ALBANI BRYGGERIERNE

## TARGETS 2005-2007

The targets of the brewery are as follows:

- 5% reduction of energy consumption
- 2% reduction of water consumption
- Waste: 2005 level to be maintained

The waste water target of Royal Unibrew has been redefined to a target for water savings because Albani does not perform regular measurements of waste water volumes.

## ACTIVITIES AND RESULTS

Electricity consumption per hectolitre output was reduced by 2% from 2004 to 2005. The reduction is primarily due to major efficiency increases at the bottling/canning facilities.

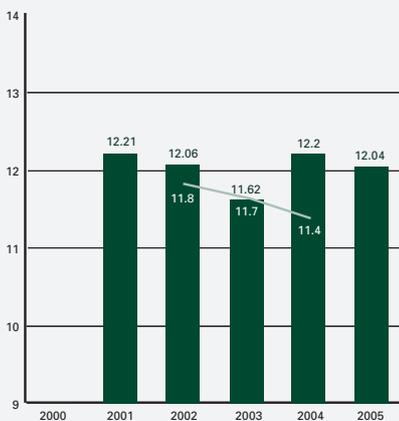
Heat consumption per hectolitre output was reduced by 5% from 2004 and is 4% better than targeted for 2005. The main reason for this is the major efficiency increases at the bottling/canning facilities. However, also improved district heating consumption control and optimisation of the natural gas consumption of the tunnel pasteuriser were contributing factors.

Water consumption per hectolitre output was

reduced by 5% from 2004, but increased by 2% as compared to the environmental target for 2005. Significant factors in reducing water consumption per hectolitre output were new facilities for producing soft water, optimisation of the water consumption of the tunnel pasteuriser and the installation of more water meters for recording detailed consumption. Furthermore, the increased efficiency at the bottling/canning facilities also contributed to reducing water consumption.

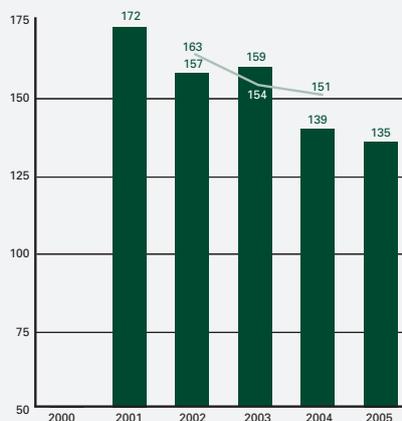
Total waste volumes per hectolitre output were reduced by 18% from 2004 to 2005. This was primarily due to increased focus and the implementation of several activities to reduce glass waste in particular. Volumes of waste for recycling increased from 78.1% in 2004 to 81.3% in 2005. The key reason for this is increased focus on sorting, eg by investment in a new waste/recycling site. The incineration share was reduced from 15.6% in 2004 to 10.6% in 2005, which is primarily due to increased focus on sorting and conversion of label waste from combustible to recycling. Finally, volumes of waste for landfills increased from 6.3% in 2004 to 8.0% in 2005.

Electricity in kWh/hl



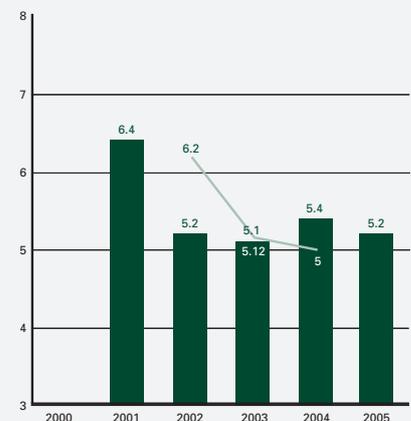
Key ratio   
Target 

Heat in MJ/hl



Key ratio   
Target 

Discharge waste water in hl/hl

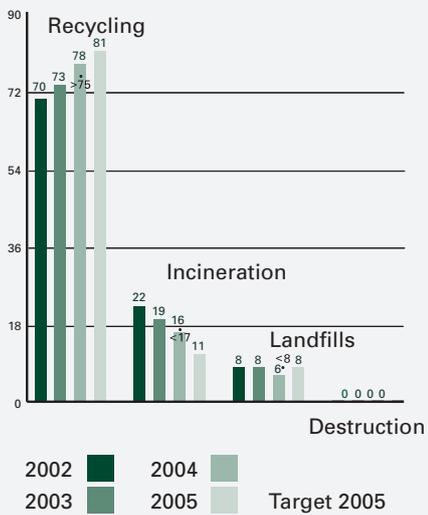


Key ratio   
Target 

**Albani Bryggerierne**  
 Tværgade 2  
 DK-5100 Odense C  
 NACE code: 15.96  
 – Breweries



**Solid waste %**



# HEALTH & SAFETY

## HEALTH & SAFETY TARGETS

Health & safety is about avoiding dangerous situations occurring at the workplace that may lead to accidents at work. Royal Unibrew measures accidents at work based on the number and seriousness of the accidents. This is illustrated by accident frequency and absence due to accidents. Targets are established based on sub-industry comparisons.

Based on the breweries' work place assessments (WPAs), improvement targets are established. For this purpose, a new WPA round was initiated in 2005 with the preparation of lists of priorities and new action plans.

## FAXE BRYGGERI

At Faxe, the records showed 3 accidents at work in 2005 - a dramatic reduction from 2004 when 12 accidents occurred. The number of accidents represents an accident frequency of 10 compared to 37 in 2004. The target for 2005 was 25. The number of hours of absence due to accidents decreased to 0.4, which is better than the target of 1.5 and the 2004 figure which was 1.4. Efforts are still being directed at reducing the number of accidents, eg by recording and addressing "near accidents".

In 2005 a new WPA round was carried out in production. This will provide documentation for a new revised list of priorities.

An emergency course and a first aid follow-up course were held in 2005.

## CERES BRYGGERIERNE

In 2005 the accident frequency was 43.5 and thus higher than the target of 31. 11 accidents were recorded. The development in the number of accidents is monitored very closely and "near accidents" continue to be recorded and addressed. Absence due to accidents for 2005 of 2.5 was below the target of 3.5. It may therefore be concluded that Ceres was spared serious accidents.

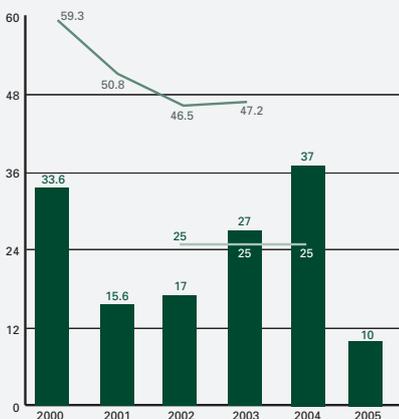
Following the implementation of WPAs in 2005, an action plan has been prepared based on priority areas.

In 2005 environmental training was organised for the employees who have not previously participated in environmental training courses.

No emergency drills were held in 2005.

### ACCIDENT FREQUENCY

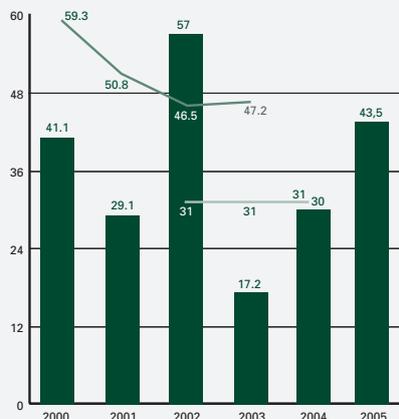
Faxe Bryggeri



Accident frequency   
Sub-industry  Target

### ACCIDENT FREQUENCY

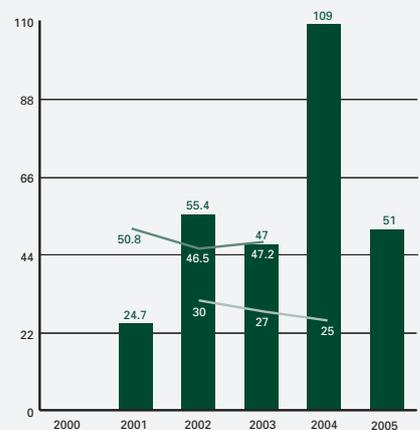
Ceres Bryggerierne



Accident frequency   
Sub-industry  Target

### ACCIDENT FREQUENCY

Albani Bryggerierne



Accident frequency   
Sub-industry  Target

### ALBANI BRYGGERIERNE

At Albani, 8 accidents at work were recorded in 2005, which is below the number in 2004 when 19 accidents were recorded. In spite of the significant improvement, the accident frequency remains high. The target for 2005 was 27, but the actual frequency was 51.2. This does, however, represent a significant improvement from 2004 when the frequency was 109. Absence due to accidents went up by 0.8 from 2004 to 2005, which is primarily due to 2 accidents involving long-term absence. Absence due to accidents for 2005 was 6.9.

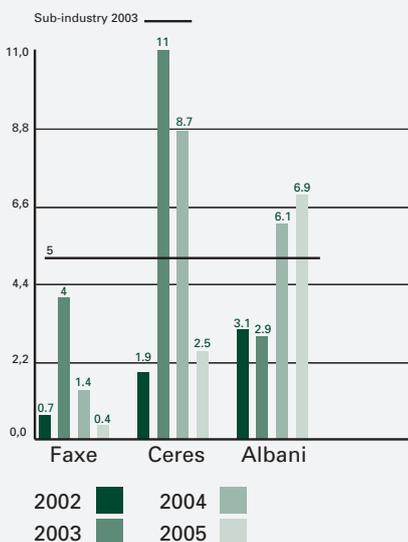
The development in the number of accidents at work was monitored closely in 2005 and many initiatives were launched to reduce the number of accidents:

- Follow-up on an accident at work and the reasons for it immediately after the accident occurring
- Accident report has been completed and sent within 24 hours of the accident
- Photo of the accident site has been published by notice at notice board
- Greater focus has been directed at reducing/removing causes of the accident

- Recording and addressing of “near accidents” have been made
- Mandatory use of safety goggles in large parts of production
- The Safety Committee has monitored the development in the number of accidents very closely in 2005 and has therefore held 3 extraordinary Safety Committee meetings during the year

The Safety Committee will continue its efforts to make the brewery an even safer place to work by intensifying safety focus and streamlining procedures relating to accidents at work. Furthermore, safety and first aid courses will be initiated.

### ABSENCE DUE TO ACCIDENTS





## PRODUCT-ORIENTED ENVIRONMENTAL ACTIVITIES

### SUPPLIER COOPERATION – REDUCTION OF INDIRECT ENVIRONMENTAL IMPACTS

Royal Unibrew A/S works continuously to reduce its indirect environmental impacts. This work is carried out in close cooperation with our suppliers. Particularly the efforts to achieve new and lighter packing types have been - and will continue to be - emphasised. This does, however, often require many tests by us and sometimes technical changes have to be made as well. The supplier cooperation also resulted in the establishment of the following environmental targets for 2005, among others:

- **Cardbox boxes for the border:**  
reducing weight and using materials with a higher share of recycling materials;
- **Cardboard/multipacks:**  
reducing the weight of multipacks from some 400 grams to 375/380 grams;
- **Screw caps:**  
dialogue with the supplier to reduce the weight of screw caps.

Between 80 and 90% of our boxes for 24 cans (33 and 50 centilitres) were reduced in 2005 to full recycling liner/test liner.

The outer liner has changed from 140 grams kraft liner to 140 grams test liner, and the inner liner has changed from 140 grams test liner to 135 grams test liner.

The efforts to reduce multipacks and to reduce the weight of screw caps are being continued in 2006.

The thickness of alu foil has been reduced from 11 micrometres to 9.5 micrometres in 2005. This has resulted in a reduction equivalent to 1,803 kilos.

The objective for 2006 is to continue focusing on materials reductions of the following packing materials:

- **Cardboard/multipacks:**  
reducing the weight of multipacks from some 400 grams to 375/380 grams;
- **Screw caps:**  
dialogue with the supplier to reduce the weight of screw caps;
- **Full cardboard – wrap around for Italy:**  
reducing weight from B-flute (2.8 mm) to E-flute (1.5 mm);
- **Labels – ordinary paper:**  
reducing weight from 70 to 65 grams;
- **Cardbord boxes for the border:**  
reducing box height from 80 to 60 mm.

# ENVIRONMENTAL ACCOUNTS

The environmental accounts quantify the key environmental impacts for 2004 and 2005. Data have been procured through accredited measurements, own measurements, environmental records, materials controls records, purchasing records and settlement vouchers.

		Faxe Bryggeri		Ceres Bryggerierne		Albani Bryggerierne	
Unit		2004	2005	2004	2005	2004	2005
<b>CONSUMPTION</b>							
Electricity	MWh	14.497	<b>14.933</b>	8.952	<b>9.217</b>	7.741	<b>7.627</b>
Heat	GJ	108.091	<b>107.057</b>	99.167	<b>97.245</b>	97.548	<b>92.186</b>
Water	m <sup>3</sup>	638.499	<b>709.571</b>	415.689	<b>402.237</b>	348.523	<b>331.813</b>
Carbon dioxide	Tons	3.613	<b>4.082</b>	2.425	<b>2.362</b>	1.393	<b>1.211</b>
Raw materials	Tons	23.288	<b>23.384</b>	20.154	<b>18.531</b>	12.984	<b>12.334</b>
Filter materials	Tons	169	<b>174</b>	217	<b>188</b>	141	<b>159</b>
Lye	Tons	1.465	<b>786</b>	659	<b>510</b>	288	<b>266</b>
Other chemicals	Tons	279	<b>472</b>	319	<b>313</b>	232	<b>266</b>
Ammonia	Kg	2.140	<b>400</b>	2.080	<b>0</b>	0	<b>0</b>
Packaging	Tons	6.327	<b>7.946</b>	27.610	<b>28.539</b>	10.418	<b>11.716</b>
<b>WASTE AND BY-PRODUCTS</b>							
By-products	Tons	15.521	<b>19.139</b>	24.160	<b>21.880</b>	9.921	<b>9.840</b>
Recycling	Tons	1.633	<b>1.413</b>	665	<b>591</b>	1.068	<b>912</b>
Incineration	Tons	326	<b>159</b>	120	<b>113</b>	214	<b>119</b>
Landfills	Tons	119	<b>84</b>	0	<b>0</b>	87	<b>89</b>
Destruction	Tons	2	<b>2</b>	1	<b>3</b>	0	<b>2</b>
<b>EMISSIONS TO AIR</b>							
Carbon dioxide (CO <sub>2</sub> )	Tons	13.854	<b>14.010</b>	13.088	<b>12.521</b>	9.455	<b>9.130</b>
Sulphur dioxide (SO <sub>2</sub> )	Tons	15	<b>16</b>	40	<b>38</b>	9	<b>8</b>
Nitrogen oxides (NO <sub>x</sub> )	Tons	7	<b>7</b>	16	<b>15</b>	6	<b>5</b>
<b>DISCHARGE WASTE WATER</b>							
Volumes	m <sup>3</sup>	448.610	<b>508.671</b>	304.842	<b>296.818</b>	260.671	<b>248.173</b>
COD	Tons	1.682	<b>2.085</b>	1.207	<b>1.063</b>	2.240	<b>1.640</b>
<b>ENVIRONMENTAL ACCIDENTS</b>							
Number of accidents	stk.	1	<b>0</b>	0	<b>0</b>	0	<b>0</b>
<b>ACCIDENTS AT WORK</b>							
Number of accidents	stk.	12	<b>3</b>	8	<b>11</b>	19	<b>8</b>

## NOTES

**Heat consumption:** the conversion factor to MJ is 40.6 for oil, 39.6 for natural gas, 36.2 for fuel oil and 202.12 for district heating. **Raw materials:** hops, malt, raw grain, sugar, glucose and other raw materials. **Filter materials:** kieselguhr and filter plates stated in purchased volumes. **Lye:** lye has been stated at purchased volumes and converted into general concentration of 27.65%. **Other chemicals and ammonia:** stated at purchased volumes. **Packaging:** bottles, casks, cans, caps, glue, other primary and secondary packaging and transport packaging. **Emissions to air:** the calculations for electricity, district heating and natural gas are based on the Green Network Manual. The calculations for oil are based on emission factors for fuel oil and heating oil with a sulphur content of 0.5%. **COD:** COD levels are based on analyses of the organic content of waste water and calculated according to calculation formula as instructed by Royal Unibrew. **Accidents at work:** an accident at work is defined as an accident registered with the Danish Working Environment Service that results in absence for 1 day or more in addition to the day on which the injury occurs.

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