



ASML



**Environment, Health & Safety
Report 2002**



Environment, Health & Safety Report 2002

ASML Mission

**Providing leading edge imaging
solutions to continually improve our
customers' global competitiveness**

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About ASML

ASML is the world's leading provider of lithography systems for the semiconductor industry, manufacturing complex machines that are critical to the production of integrated circuits or chips.

ASML technology transfers circuit patterns onto silicon wafers to make every kind of chip used today, as well as those for tomorrow. This technological advancement of making chips increases as digital products become more pervasive – such as mobile phones, consumer electronics, PCs, communications and information technology equipment.

With each new generation of chips, personal and business products become smaller, lighter, faster, more powerful, more precise, more reliable and easier to use. In parallel, the global semiconductor industry is pursuing its long term roadmap for imaging ever-finer circuit lines on silicon wafers.

ISO 14001 Certified:

- Track facility, San Jose, California, U.S.
- Corporate headquarters, Veldhoven, the Netherlands

ISO 9001 Certified:

- Corporate headquarters, Veldhoven, the Netherlands
- Lithography facility, Wilton, Connecticut, U.S.
- Track facility, San Jose, California, U.S.
- Tempe office, Tempe, Arizona, U.S.

Message to Our Shareholders

2002 was year two of the worst downturn in the semiconductor industry's history. Looking at 2003, we see neither rapid recovery nor major improvements. However, our environment health and safety (EHS) policy continued to be important to us in 2002, resulting in some achievements we are proud of, such as the ISO 14001 certification of our headquarters in Veldhoven, the Netherlands.

Some EHS activities were curtailed or postponed due to budgetary restraints. However, our objective remains to build and maintain an EHS management system in compliance with international standards. We also intend to receive certification for our global operations through compliance with those standards by means of regular audits by independent experts.

For 2003, we have established a number of goals, including:

- Implement a new plan for energy and water reduction based on investigations completed in 2002
- Implement a project to separate waste streams to optimize recycling at all major locations
- Initiate inclusion of OHSAS 18001 safety management criteria into ASML's management system
- Continue to develop and implement a formal management system to drive the continual improvement of our environmental performance

Our EHS policy continues to form an integral part of ASML's global company policy. It is based on the following principles:

- ASML aims to satisfy EHS legislation and regulations
- ASML endeavors to minimize the negative environmental effects of its activities. We will control and restrict emissions into the air, water and soil, as well as control and restrict noise pollution, waste and energy consumption.
- ASML will shape its EHS policy by using an effective management system, conforming to international standards.
- ASML will ensure that third parties working at ASML comply with our EHS standards.
- ASML aims for open communication with our neighbors, the authorities and public interest groups.

We invite our customers, suppliers, governmental groups and environment, health and safety bodies to work with us to achieve our goals. ASML will continue to do its part as a concerned partner wherever we do business.

Doug J. Dunn



President, Chief Executive Officer and Chairman of the Board of Management
ASML Holding N.V.

Veldhoven, January 30, 2003

Highlights from 2002

Some of our accomplishments in the environment, health and safety arena are detailed below:

- ASML in the Netherlands achieved its ISO 14001 certification based on its Environmental Management System (EMS) (excluding Marketing and Technology).
- At our headquarters in the Netherlands, we completed the implementation of a building intelligence system known as PRIVA for better EHS performance of our buildings.
- Worked with local engineering consultants in Veldhoven on plans to create an underground hot and cold water storage (aquifer) that does not harm the local habitat.
- In 2002, we launched an investigation to determine ways to reduce our water consumption in the Netherlands.
- ASML in the Netherlands realized environmental, health and safety benefits from the nitrogen plant that was installed in 2001.
- This year, ASML in the Netherlands hired a local consultant to start a project to separate streams of waste for recycling to be implemented in 2003.
- We performed a risk assessment survey of soil contamination in the Netherlands.
- We continued our waste water analysis project with the Dutch local municipality and made adjustments as needed.
- ASML facilities participated in water conservation by using reclaimed water from municipal waste water treatment for landscape irrigation.
- ASML chaired a task force for development of the SEMI S19 industry safety guideline for Personnel EHS Training published in 2002.



Goals for 2002

In 2002, ASML focused its environmental program on the following activities:

- Making the cleanroom cleaner
- Using an energy-saving aquifer for underground water cooling
- Risk assessment of soil contamination
- Waste Water Composition Analysis
- Environmental management on a global scale
- Recycling and revamping of packaging
- Decreasing water use
- Changing from simple to complex gases and using them in a more economical way

Activities are described in detail on the following pages.



Waste

In 2002, ASML in the Netherlands hired a waste analysis consultant to help us improve our waste performance. The consultant categorized the major streams of waste that ASML produces in our daily business activities. A plan was then prepared for ASML to separate and recycle these major streams, which include wood, plastic, aluminum, stainless steel and plastic foil. In 2002, we started a project to separate these streams. Improvements will be implemented in 2003.

Recycling

Glass, paper and plastic was collected and recycled at most ASML facilities worldwide. In addition, product shipping containers are returned to ASML for reuse. Our offices in China, Japan and Korea initiated the following office policies in 2002:

- Stopped using paper cups
- Stopped using wooden chop sticks
- Printed documents on both sides

Waste (Veldhoven only)	2001	2002
Domestic waste	456	408
Paper	196	101
Wood*	123	187
Swill	194	219

(figures in metric tons)

* Wood waste is related to our construction activities

Special waste flows (Veldhoven only)	2001	2002
Electronics	14	16
Sulfuric acid	48	47
Other chemicals	15	17
Metals	29	63

(figures in metric tons)

Energy

Further use of the Energy Management System (EMS) installed in Veldhoven

ASML manufactures systems that aid in the production of semiconductor chips. For the production of these systems, we consume and generate large amounts of energy. When energy is generated, harmful gases are emitted to the surrounding environment. Therefore, energy is our main environmental concern and is the major focus of our environmental conservation efforts.

In 2002, ASML has implemented many energy-conservation projects that focus on energy reduction in our cleanroom and in our office buildings.

Energy consumption	2001	2002
Electricity	117,700	127,374
Co-generator return supply (MWh) (Veldhoven only)	4,906	15503
Natural gas (1000 m ³)	10,975	10,284
Fuel oil (1000 ga) (Wilton only)	162,620	206,000
Propane (GA) (U.S. only)	16,000	16,500
Hydrogen cuft (U.S. only)	107,000	4,500*

* Drop in product (lamps) demand

EHS management in our buildings

ASML buildings on the ASML campus in the Netherlands were designed with many energy-saving features, including high-efficiency fluorescent lighting, an energy generator to produce our own heating, high-quality heating boilers and wall and window insulation. To complement our energy-efficient building design, in 2002, ASML in the Netherlands completed the implementation of the PRIVA building intelligence system in all 10 buildings on the ASML campus in 2002.

This system contributes to our environmental, health and safety performance by monitoring various aspects of the buildings so that immediate action can be taken when needed, and by controlling energy use in the buildings. The following are examples of the capabilities of our PRIVA system:

- Constantly monitors the gas lines and gas storage, and sounds an alarm when there is a leak or other hazardous situation
- Sounds an alarm when a fire or smoke is detected
- Continuously monitors and reports on the air quality inside the buildings
- Helps save energy by automatically switching off lights and turning down heating and air conditioning after working hours
- Monitors wastewater and sounds an alarm when the quality deviates from the defined standard
- Increases and decreases the ventilation that purifies the air in our cleanrooms according to the number of systems that are running. This regulation ensures that the ventilation does not run continuously in full force
- Allows us to regulate the quantity of process-related utilities such as compressed air

Energy reduction in the cleanroom

Our manufacturing process relies heavily on the use of cleanrooms. Cleanrooms are work areas in which air has been made as clean (a limited number of dust particles per cubic meter) as possible. To achieve these clean conditions, air from outside the work area is filtered, cooled down, moisturized and then cooled to the required temperature. Not only does the air have to be treated the first time, but it must be kept permanently clean. To do so, the air is continually pumped around the room. Dust particles generated within the room are immediately removed by the air flow. Three-quarters of the air used can be recycled, and one quarter must be replenished from the outside. Even though air is cooled as it enters the room, the temperature rises quickly because the equipment inside the work area produces a lot of heat. Therefore, in addition to being continually pumped around the room, the air must be constantly cooled. These processes consume a tremendous amount of energy. Because of the prolonged industry downturn, we delayed the investigation into how we can reduce energy consumption in our cleanrooms. However, at the end of the year, we resumed the investigation, which will continue into 2003.

Further energy reductions

Apart from the building management system and the investigation into using underground aquifers, in 2002, we also began an additional investigation into energy savings. For example, the investigation is exploring ways to change the cleanroom energy specifications. The ASML cleanroom currently adheres to strict temperature and humidity requirements. We can save energy by building more flexibility into these requirements so that less energy for cooling and heating is required. We are also looking at ways to design our manufacturing systems so that they give off less heat, and in turn, less cooling is required to maintain the needed cleanroom temperatures. These energy-saving ideas were part of a complete plan to save energy; this plan will be implemented in 2003.

In Asia, the following energy-saving initiatives were implemented in 2002:

- In Korea, three offices were combined to one location, saving on energy costs
- A solar heater was installed in the China office to warm the water in restrooms
- Timers were installed to automatically turn off office lights at set times
- An energy-saving air conditioner control system was employed in Japan

Air

In 2002, ASML completed the implementation of a new gas management system, which is designed and controlled by an engineering firm known as Hoekloos in the Netherlands. This gas management system is connected to our PRIVA building intelligence system. ASML uses many specialty gases, including helium, krypton and fluorine. Each clean room needs these gases in different quantities, with different compositions and different levels of quality. Using the gas management system connected to PRIVA, we can monitor the flow of these gases on line. Monitoring the gas flow enables us to detect gas leakage, as well as management information such as usage trends.

Environmental benefits of new nitrogen plant

In 2001, ASML installed a plant to manufacture liquid nitrogen in the Netherlands. In 2002, the nitrogen plant has been in full operation and has been proving beneficial to the environment, as well as to the health and safety of our employees.

- ASML needed the plant because of the large amount of nitrogen that we use in our manufacturing operations. This amount is increasing because our newer systems consume more nitrogen than the older systems do.
- Before the plant was installed, ASML used approximately 700 liters per week of gasoline in the nitrogen transport trucks. With the new plant, we no longer have to transport the nitrogen we use. Thus, our consumption of gasoline, as well as the emission of gasoline to the air, is reduced.
- The plant also decreases health and safety risks for our employees, because loading and unloading the nitrogen was a safety risk. In addition, nitrogen was sometimes spilled during loading and unloading. With the new fixed lines in the nitrogen plant, the nitrogen is not spilled, and employees no longer have to handle the nitrogen.

Working toward energy reduction

The energy reduction investigations that we have undertaken in 2002 will ultimately contribute to the reduction of pollutants to the air. If we generate less energy, we will also emit less harmful gases.

Emissions to air	2001 (Veldhoven only)	2002 (Veldhoven only)	2002 (worldwide)
CO ₂ (tons) (fuel)	19,500	15,819	27,595
NOx (kg)	22,825	17,630	

Special gases (Veldhoven only)	2001	2002
Specialities*	1,723	4,388
Nitrogen bulk**	2,798	1,109
Nitrogen produced***	0	5,180

(figures in metric tons)

* Mainly mixtures of noble gases

** In metric tons

Higher figures caused by exacter registrations by Hoekloos (Total Gas Management). In 2002, one employee of Hoekloos is present about 10 hours a week on ASML property to manage all storage and transport of gases.

*** Nitrogen is produced by the nitrogen plant in Veldhoven.

Water

In 2002, we launched an investigation to determine ways to reduce our water consumption in the Netherlands.

A consultant in the Netherlands performed the investigation. As part of the survey, we are examining how we can use excess ground water for process water rather than pumping it into the nearby canals. Unfortunately, the amount of drainage water seems to be too small to give a significant water consumption reduction.

Water consumption (worldwide)	2001	2002
Total water usage (m ³)	418,518	378,921

Breakdown of total water consumption (Veldhoven)	2001	2002
Water disposed to sewage	364,103	110,331
Cooling water to surface	43,952	71,669
Moisturizing steam (as 2.5% of total use)	10,463	5,191

(figures in cubic meters)

Waste water analysis

In 2001, ASML in the Netherlands made an agreement with the local municipality to continue a waste water analysis program for 1.5 years. The program continued through 2002 and will continue in the beginning of 2003.

All results from waste water analysis are communicated to local authorities. Based on the results, agreements will be made for periodic waste water analyses.

Soil risk assessment

In 2002, we performed a risk assessment survey of soil contamination in the Netherlands. The survey was carried out according to the Dutch NBR-standard. The results of the survey classify the risk of contaminating the soil as minimum at the ASML premises in Veldhoven. Therefore, no additional measures are required by the NBR.

Cooling Capacity

Application of underground cool storage in Veldhoven, the Netherlands, to limit energy consumption

In 2001, we launched an investigation into using an underground aquifer to store cool water underground to cool our cleanrooms. (An aquifer is a geological formation that can hold water.) The water is kept cool by drilling a well in the aquifer, pumping up the water inside, cooling the water and then feeding it back into the aquifer. The water in the aquifer can cool the air in an extremely cost-effective way, saving significant amounts of energy.

Additionally, ASML in the Netherlands has a co-generation plant through which we burn natural gas to provide heat and electricity. The surplus heat produced by the co-generation plant is cooled and used in our cleanrooms and offices through a process known as absorption cooling. In winter, since less cooling is required, the surplus heat is lost into cooling towers. However, in the summer, the absorption cooling is not enough, so extra capacity must be provided using normal compression cooling techniques, which use tremendous amounts of energy. To achieve a better balance of cooling and heating, ASML would like to use underground aquifers. The aquifer would result in energy savings for ASML by enabling us to store the excess cool energy in the winter for cleanroom and summertime use. In turn, we could store excess warm air in the summer to heat the offices in the winter.

In 2001, the progress on this plan was slowed by concerns from local environmental authorities, that the technique would change the level of underground water flow in the area, and would subsequently endanger the local habitat. ASML was, however, convinced that a solution could be found that would satisfy the concerns of environmental authorities and still enable us to create the aquifer.

With this goal in mind, in 2002, we contracted a local engineering firm to assist us with the plans for the aquifer. Together, we have formulated proposals to prevent the aquifer from harming the environment. One proposal is the formation of a ditch around the aquifer, which would catch and stabilize the water so that it does not affect the surrounding water levels. We are also investigating other more cost-effective ideas. In 2003, we will again approach the environmental authorities with a new economical solution. This solution will allow us to create the aquifer while satisfying environmental concerns.

Health and Safety

Incident rate

For the calendar year ending December 31, 2002, the ASML worldwide employee injury rate (all reported injuries) is 2.78 incidences per 100 workers. Average monthly headcount was used for the calculation; therefore, the rate does not account for part-time workers, overtime hours, sick time, vacation, etc. The data accounts for all documented injuries, regardless of severity. Although conservative, this rate is well below the U.S. industry injury rate of 6.1 serious injuries per 100 full-time workers.

2002 ASML work related fatalities = 0

Emergency preparation

ASML ensures its employees are properly trained in how to respond in the event of an emergency such as a fire, earthquake, or chemical release.

To help ensure the safety of our employees, ASML maintains emergency response teams. These teams are trained to assist and lead employees during dangerous situations.

The emergency teams are trained in first aid, building evacuation and fire fighting. ASML always keeps an adequate number of emergency team members to support its employee base.

Further 2002 health and safety initiatives

- In Japan, all employees attended facility safety training 10 times during the year; the training was conducted by the Kawasaki city safety department.
- All Japanese employees attended fire and earthquake-escape training.
- A minimum of two engineers were on duty full time in the cleanrooms of Japanese customer fabs to fulfil customer safety regulation requirements.

- In addition to training in emergency procedures, ASML provides personnel with training in the potential hazards associated with their job and appropriate techniques to ensure their protection. Training is offered in topics such as chemical hazards, hazardous energy control and personal protective equipment.
- ASML routinely conducts safety audits in its facilities worldwide. For example, in Korea, an audit was conducted, and the suggested safety improvements resulting from the audit were implemented by the end of the year. Examples of these improvements include installing a switch to immediately turn off training test equipment during an emergency situation, placing hazard labels on equipment and protecting all gas lines.



- In Veldhoven, the company doctor moved into a new surgery at the ASML plant itself. Now employees don't have to go outside the campus for their appointments.

Occupational Health and Safety Risk Assessment

In a cycle of three years, ASML updates its existing Health and Safety Risk Assessment to assess and evaluate any new technology and processes introduced. In 2002, such an update was executed for half of the buildings of ASML's campus, regarding about 40% of the workforce. Based on the results, ASML will adjust its policies and will structuralize them in a management system (OSHAS 18001, see Goals for 2003).

In the fourth quarter, our OHSE department gained access to a database for Material Safety Data Sheets. It is now possible to search for any chemical, which ASML was not able to do before. Also, this database allows us to store all the MSDSs of chemicals in use within ASML.

Throughout 2002, sessions were organized to provide fire-instructions and building evacuation procedures. Videos showed the measures ASML takes to prevent a fire and the role employees play in the prevention scheme.

Our employees from the ICT department were instructed on the inert gas fire-extinguishing system, which is in use in ASML's computer rooms.



Additional Achievements in 2002

ISO 14001 certification

ASML in the Netherlands recently received ISO 14001 certification (excluding Marketing and Technology). The ISO 14001 is a standard that sets requirements for planning, measuring, reporting and improving the environmental performance of companies around the world. By achieving this certification, ASML in the Netherlands has shown that it meets the minimum demands of the International Standards Organization's (ISO's) requirements for good environmental performance. It also ensures that there is a system in place for constant environmental improvement.

ISO 14001 requires the implementation of an Environmental Management System (EMS). ASML's EMS, as well as the ASML environmental organization in the Netherlands, were evaluated for the ISO 14001 certification.

Conducting business in a responsible way

Each year, ASML produces an external publication containing our corporate principles of ethical business conduct. This document shows how ASML conducts business in a responsible way in relation to the people with whom we interact, and to the environment.

In 2002, Internal Communications translated this document into Internal Guidelines for Ethical Business Conduct. The guidelines address what ethical business conduct means for us internally as a responsible global enterprise. Managers and team leaders were encouraged to stress the importance of the document to employees and discuss how it relates to their daily work.

Goals for 2003

For 2003, ASML has set a number of environment, health and safety goals

- In Veldhoven, meet with local authorities to come to an agreement for an underground aquifer for energy reduction in our cleanrooms that is in no way harmful to the environment.
- Continue investigating additional ways to reduce energy consumption in our cleanrooms.
- Implement a new plan for energy and water reduction based on investigations completed in 2002.
- Implement a project to separate waste streams to optimize recycling at all major locations.
- Initiate inclusion of OHSAS 18001 safety management criteria into ASML's management system.
- Implement an integrated data management system to automate key EHS performance data.
- Continue to train ISO 14001 strategy throughout the company.

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