

Environmental Statement

2002

(April 2002 – March 2003)

DENSO
BARCELONA, SA



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INTRODUCTION

DENSO CORPORATION was formed in Japan in December 1949, and is devoted mainly to the production of components for the automotive sector.

Aware of the environmental repercussions of its activities and based on its philosophy, DENSO formulated the DENSO Environmental Charter and the DENSO Environmental Action Plan in 1993 to clarify its fundamental mind-set and to define the steps toward realizing the goals of the Environmental Action Plan.

Fundamental principles

DENSO philosophy
DENSO Environmental Charter

Planning and objectives

DENSO Environmental Action Plan

Environmental Protection Activities and Management

Activities and management based on environmental management system standards (ISO 14.001)

DENSO PHILOSOPHY PRINCIPLES

1. Customer satisfaction through high quality products and services.
2. Global growth through anticipation of change.
3. Environmental preservation and harmony with society.
4. Corporate vitality and respect for individuality.

Through the "DENSO Environmental Action Plan", DENSO CORPORATION encourages the obtaining of ISO 14.001 certification for all the plants of DENSO throughout the world. DENSO BARCELONA, S.A., (DNBA) has not only certified its Environmental Management System according to the ISO 14.001 standard (December 1998) but has also adapted its System to meet the requirement of Regulation (EC) N° 761/2001 (EMAS II), for which purpose this statement has been drawn up.

COMPANY PRESENTATION

COMPANY LOCATION

Denso Barcelona is located in the industrial estate "Pla de Santa Anna" in the municipal district of "Sant Fruitós de Bages" in Bages country (province of Barcelona).

COMPANY ACTIVITY

Denso Barcelona is part of the Japanese multinational DENSO Corporation, as a subsidiary and production plant. The design work for the products manufactured by Denso Barcelona is carried out in the design sections of Denso Japan. The customer contact and sales work is carried out entirely through the pertinent sales offices: DENSO SALES UK LTD with headquarters in the United Kingdom, DENSO EUROPE B.V. with headquarters in Holland, and DENSO INTERNATIONAL AMERICA INC. with headquarters in United States.

The activity of the company is based on the production of electronic products, body electronic components, and sensors & actuators for the automotive industry.

In 1991 the production of coils (ignition units) began, and in 1993, with the first expansion of the company, the production of electronic devices began.

During 1997 a second expansion phase was carried out and during 2000 year a third expansion phase with the construction of a new building next to the initial building, in which the manufacturing of new products (oxygen sensor) started in 2001. During 2000 the manufacturing of three new products started: Stick Coil, AFM and EVRV.

Finally, at the end of 2002, the Meter Cluster production started and, at the beginning of 2003, the Relay Flasher.

The number of employees in 2002 (April'02-March'03) was 549.



Aerial photograph of Denso Barcelona, S.A.

DESCRIPTION OF THE MANUFACTURED PRODUCTS

The products manufactured by Denso Barcelona are divided in three big groups: the Electronic Control Units, the Body Electronic Components and the Sensors & Actuators of the System.

1. Electronic control units:



E/G ECU

ENGINE ECU: ELECTRONIC ENGINE CONTROL UNIT.

This device controls the injection of the fuel into the cylinders, the timing of the ignition of the spark plugs and the optimal level of engine idling, and it incorporates a diagnosis function to ascertain the state of operation of the system.

2. Body electronic components:



A/C ECU

2.1 A/C ECU: AIR CONDITIONING ELECTRONIC CONTROL UNIT.

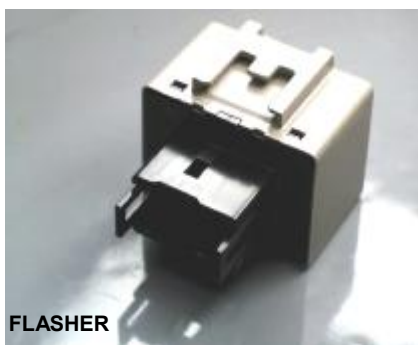
This electronic device controls the temperature and the air quantity that enters the car, and its distribution by the diffusers.

2.2 LAS-D/L ECU: LOCK/ALARM – DOOR LOCK SYSTEM ELECTRONIC CONTROL UNIT.

It centralises the closing of the doors, and controls the locking of these with the possibility of working them from a distance. It is also in charge of controlling the alarm.



LAS ECU



FLASHER

2.3 RELAY FLASHER.

Relay to control the intermitence lights.

2.4 METER CLUSTER.

It's the luminous instrumentation panel that give information to the driver about the conditions of the car such as the miles ran, the speed, the revolutions per minute, etc.



METER CLUSTER

3. Sensors & actuators:

3.1 IGNITION COILS

Provide the energy for the spark plugs to enable them to cause the explosion of the fuel in the cylinders of the engine. Within the ignition coils, Denso Barcelona, S.A. manufacturers five different types:

1. 6T DLI: DOUBLE DISTRIBUTION COIL. Each coil feeds six cylinders.



2. S-DLI: SINGLE DISTRIBUTION COIL. Each coil feeds a single cylinder.



3. S-IIC: SINGLE COIL WITH INTEGRATED IGNITER. This has the same function as the other coils, but with an igniter incorporated. The igniter controls the timing of energy distribution to the spark-plugs.



4. D-DLI: DOUBLE DISTRIBUTION COIL. Each coil feeds two cylinders.



5. STICK COIL: A single coil with integrated igniter which can be installed in the engine directly due to its cylindrical shape. Each coil feeds a cylinder.



3.2. AIR FLOW METER

Detects the amount and nature of the air drawn into the engine's cylinders and then sends a signal to the Electronic Control Unit (ECU) which can then control the engine consumption using those data.



Air Flow Meter



Air Flow Meter with duct

3.3. ELECTRIC VACUUM REGULATING VALVE (EVRV)

Controls an input vacuum signal (the engine consumption) in order to regulate a desired output vacuum signal (the emissions). It is used in diesel engines. There are three different types depending on the engine power.



3.4. OXYGEN SENSOR

Detects oxygen concentration in the exhaust gas to control air-fuel ratio so as to purify harmful constituent most efficiently. The advantages are cleaner air and less fuel consumption.



DESCRIPTION OF THE PRODUCTION PROCESSES

Here the production processes for the three ranges of products manufactured at Denso Barcelona, S.A. are described.

ELECTRONIC CONTROL UNIT PROCESS

ELECTRONIC CONTROL UNIT

Assembly of surface components on the top face of the printed circuit and fusion welding.

Insertion of conventional components (axial and radial).

Insertion of components of non conventional forms.

Assembly of surface components on the lower face of the printed circuit.

Assembly of the connector, power transistors, relays, etc. and wave soldering.

Functional verification of the product.

Antihumidity coating.

Final assembly of the product (box, cover, etc.) and labelling.

Final check and inspection of the product.

Package and shipping.

BODY ELECTRONIC COMPONENTS PROCESS

METER CLUSTER

Printed circuit assembling in previous process till soldering step.

Functional verification of the product

Antihumidity coating and cutting of the printed circuit board

Assembling of the different parts

Lower case screwing

Assy calibration and powder cleaning

Front crystal assembling

Functional verification at room temperature and visual inspection

Package and shipping.

RELAY FLASHER

Cover assembling and internal parts assembling.

Case assembling.

Terminal pitch check and performance inspection.

Appearance visual final inspection

Package and shipping.

SENSORS & ACTUATORS OF THE SYSTEM PROCESS

CONVENTIONAL COIL

Plastic injection-moulding for making the chassis.

Terminal assembly, primary winding with copper wire and soldering.

Terminal assembly, secondary winding with copper wire and soldering.

Winding assembly, core and connector.

Encapsulating with epoxy resin and curing in oven.

Functional verification of the product, final visual inspection and labelling.

Package and shipping.

STICK COIL

Primary and secondary spools molding.

Assembly of the terminals to the spools.

Primary and secondary winding with copper wire.

Soldering of the copper wire to the terminals.

Soldering check with screen.

Assembly of the primary in the secondary.

Assembly of the coil external part (casing, magnetic core...).

Assembly of the connector and soldering to the terminals.

Assembly: the external part and electrical part.

Encapsulating with epoxy resin and curing in oven.

Automatic inspection of electrical characteristics.

Assembly of the seal rubber.

Package and shipping.

OXYGEN SENSOR

Parts washing.

Ring talc forming.

Parts heat treatment in ovens.

Sensor parts assembly.

Preheating in oven and inspection.

Sensor-wire assembling.

Inspection, marking, package and shipping.

AIR FLOW METER (AFM)

Assembly, using adhesive, of the sensor, bypass housing and center housing. Curing in the oven.

Circuit adhesive-assembling and curing in the oven.

Circuit, sensor and connector connection (wire bonding).

Voltage characteristics measuring and adjustment of the circuit using a laser.

Filling with silicone to guarantee internal protection. Curing in the oven.

Fitting the cover, using adhesive. Curing in the oven.

O-ring assembly and vacuum-seal inspection.

Voltage characteristics measuring. Final visual inspection.

Finally, depending on the product, duct assembly .

Package and shipping.

ELECTRIC VACUUM REGULATING VALVE (EVRV)

Assembly of the silent-blocks in the bracket.

Assembly of the EVRV pumps (1,2 or 3, depending on the product) and the air reserve tank.

Collar press-fitting in silent-blocks.

Assembly of the vacuum harness.

Final inspection and vacuum check in working conditions.

Package and shipping.

PRESENTATION OF THE ENVIRONMENTAL MANAGEMENT SYSTEM

The Environmental Management System implemented by Denso Barcelona, S.A. has been prepared by following the guidelines and complying with the requirements of the following standards:

- ISO 14.001. Environmental Management Systems. Specifications with guidance for use.
- Council Regulation (EC) No. 761/2001 (EMAS II), allowing voluntary participation by companies in the industrial sector in a community eco-management and audit scheme.

The foundation of the Environmental Management System of Denso Barcelona, S.A. is the **Environmental Policy**, whose basic principles are compliance with legislation and other requirements, the prevention of pollution and continuous improvement. The Environmental Policy has been defined by the Top Management on the basis of the DENSO philosophy principle: "Environmental preservation and harmony with the society."

Starting from the Environmental Policy and having in mind, among other things, significant environmental aspects and legal and other requirements, the annual **Environmental Objectives** and the **Programme** for their implementation are planned.

To achieve fulfilment of the Environmental Policy, the Management System has been documented and structured in the following way:

- Environmental Manual: It describes the responsibilities of the organisation and the elements that the Management System is composed of, making reference to the procedures related with each element.
- Procedures: They describe the operations to be carried out for the fulfilment of the system requirements.
- Work Instructions. They describe in a more detailed way specific operations related with the procedures.

The Managing Director of Denso Barcelona, S.A., Kazuo Ido, as the person responsible for the company has delegated to the General Manager of Production Engineering, Mr. Hiroshi Kawabata, the authority and responsibility for assuring that the requirements of the Management System are fulfilled, also creating for that purpose the Environmental Committee made up of members of the various sections of the company.

Periodic reviews of the Management System through internal audits and external ones (maintenance audits by the certification body), as well as the review by Top Management, provide for the continuous improvement of the system.

ENVIRONMENTAL POLICY

We will now set out the environmental policy of Denso Barcelona, S.A. The area of application of our policy is the manufacturing of electronic, ignition and system control components for the automotive industry. Under this policy, we engage in the conservation of the local environment and also global environment, contributing with society for a better environmental future.

- To develop an open relationship with society and put information available to the public on the environmental repercussions of our activities.
- To adopt the possible measures to reduce the environmental risks of our activities.
- To identify and to evaluate the environmental repercussions of our activities, pre-evaluating the repercussions of new activities, products and processes as well as examining any significant impact of these activities on the environment.
- To carry out actions to prevent, eliminate or reduce the emissions of pollutants and to preserve natural resources as far as possible.
- To heighten the workers' awareness and to train them in order to promote a positive attitude towards environmental preservation.
- To inform the external companies working with DNBA about the need for adopting our environmental attitude and principles.

- To revise the Environmental Management System periodically, keeping in mind any potential significant impacts of our activities on the environment.
- To contribute to the continuous improvement of our environmental performance with a view to reduce the environmental impacts as much as possible.
- To keep watch over the fulfilment of environmental legislation applicable and other requirements related with the DNBA environmental aspects.

Note: For the manufacturing of the products, account is taken of the customers' environmental requirements through Denso Japan.

Denso Barcelona, S.A. undertakes to examine and to review its environmental policy periodically and to make it known to all its associates and to the public in general.

Date: 16/08/01 (6th revision)

Environmental Committee
Chairman

HIROSHI KAWABATA



Denso Barcelona, S.A.
Managing Director

KAZUO IDO



ASSESSMENT OF THE ENVIRONMENTAL ISSUES AND QUANTITATIVE DATA

This section describes significant environmental aspects resulting in significant environmental impacts. To carry out the significance evaluation of the different aspects, Denso Barcelona S.A. has a specific procedure for covering the following points:

- Legislation application
- Aspect nature (danger)
- Probability or frequency of occurrence
- Amount
- Environmental repercussion

NATURAL RESOURCES AND RAW MATERIAL CONSUMPTION

ELECTRICAL POWER CONSUMPTION

The main form of energy used in the productive process is electrical power. Monthly controls are carried out on consumption levels.

Next the data on consumption of electrical power, in relation to the pieces produced and in total, are given.

Electrical Power	1998	1999	2000	2001	2001 (Abr'01-Mar'02)	2002 (Abr'02-Mar'03)
Consumption in relation to the production	2,94 Kw h/prod.	2,58 Kw h/prod.	2,28 Kw h/prod.	1,98 Kw h/prod.	1,78 Kw h/prod.	(1)
Total consumption	5.019.300 Kw h	5.388.600 Kw h	5.775.100 Kw h	6.800.463 Kw h	7.087.404 Kw h	8.135.845 Kw h

Since the fiscal year 2002, the CO₂ emission related to sales are controlled.

(1) See CO₂ emission data for the corresponding year.

GAS CONSUMPTION

Propane is used as fuel in the heating boilers and the system of radiant heating. A monthly control on the consumption is carried out.

Next the data on the consumption of propane, in relation to the number of workers and in total, are given.

GAS (propane)	1998	1999	2000	2001	2001 (Apr'01-Mar'02)	2002 (Apr'02-Mar'03)
Consumption in relation to the number of employees	600,79 L/pers	559,64 L/pers	573,91 L/pers	526 L/pers	522,93 L/pers	(1)
Total consumption	148.995 L	162.855 L	198.000 L	220.605 L	236.940 L	271.260 L

Since the fiscal year 2002, the CO₂ emission related to sales are controlled.

(1) See CO₂ emission data for the corresponding year.

CO₂ EMISSION

Next, the data on CO₂ emission (due to energy and gas consumption) since the fiscal year 2002 (April-March) related to sales are given.

CO ₂	2002 (Abril - Marzo)
CO ₂ emission in relation to the sales	7,12 KgCO ₂ /M€
Total emission	1.179.237 KgCO ₂

WATER CONSUMPTION

The productive processes are carried out dry, and so water consumption is mostly for sanitary purposes. The watering of the green areas is the activity that generates the biggest consumption of supply water. The water is also used for the refrigeration tower and the refrigeration and heating circuits. Monthly controls on the consumption are carried out.

Next come the data on water consumption in relation to the number of employees, and the total consumption.

Water	1998	1999	2000	2001	2001 (Abr'01-Mar'02)
Consumption in relation to the number of employees	64,59 m³/pers	43,38 m³/pers	54,39 m³/pers	57,94 m³/pers	53,23 m³/pers
Total consumption	16.018 m³	12.624 m³	18.764 m³	24.281 m³	24.120 m³

RAW MATERIAL CONSUMPTION

The main raw materials used for the production of the products of Denso Barcelona, S.A. are:

Raw Material	Process	1998 (Tn)	1999 (Tn)	2000 (Tn)	2001 (Tn)	2001 (Tn) (Apr'01-Mar'02)	2002 (Tn) (Apr'02-Mar'03)
Epoxy Resin	COIL	164	172	203	154	167	208
Hardener	COIL	47	51	52	44	48	58
Cooper Wire	COIL	128	146	170	153	164	199
Injection plastic	COIL	91	87	113	85	93	116
Bars of Tin	ELEC	8	17	20	22	21	10

WASTE WATER

Waste water is basically the sanitary type and is treated by means of a biological treatment system involving activated sludge with long lasting aeration.

The waste water treatment system consists of a preliminary screening grid, an aeration tank or biological reactor and a decanter. The sludge accumulating at the bottom of the decanter is partly recirculated. Another part is channelled towards a tank to be sent subsequently to a treatment plant authorised by the Waste Board ("Junta de Residuos"). The run-off from the decanter is channelled directly into the public sewage system, since the collectors to take the waste water to the public treatment system have not yet been installed in the Industrial Estate. DNBA was given authorisation to discharge by the Treatment Board ("Junta de Saneamiento") in July'99.

In the following chart the mean values of contamination of the waste water obtained annually.

The legal limits applicable to the year 98 are those of Chart III of the RDPH (Regulations for the Public Water System). The limits applicable to the first semester of the year 99 also correspond to Chart III of the RDPH. Starting from the second semester of 99, authorisation to discharge having been granted, the limits applied are those established in that authorisation.

Twice a year other parameter measurements are carried out. In the case of nitrates the results obtained are above the limits. Some corrective actions have been set in order to study and try to solve the problem.

Parameters	Units	Legal limits	1998	New Legal limits	1999	2000	2001	2001 (Apr'01-Mar'02)	2002 (Apr'02-Mar'03)
pH	---	5,5 - 9,5	6,2	6 - 9	6,5	7,0	6,8	6,9	7,2
SS	mg/l	40	14	40	19	15,1	12,5	14,1	9,6
COD*	mg/l	160	54,2	160	76,9	69,8	56,3	65,3	63,7
BOD ₅ *	mg/l	80	13,7	80	20,3	21,5	11,4	16,9	17
Detergents	mg/l	---	---	3	0,2	0,1	0,03	0,05	0,06

ATMOSPHERIC EMISSIONS

Emissions to the atmosphere are mainly due to: the soldering processes in the production process for the ignition products and for the electronic products (lead, tin, organic compounds and particles); the varnishing processes in the production process for electronic products (organic compounds); and the boilers and burners for radiant heating (CO, NO_x).

* Internal limits. The values included in the column Limits that are not marked with an asterisk are legal limits.

(1) The levels of VOCs for the emission sources Stick Coil 1, Stick Coil 2 and Stick Coil 3 corresponding to 2000 year are above the internal limits. The reasons for this are error in the measuring method. The levels of VOC for the Soldering emission sources related to the years 1999 and 2000 are below the internal limits probably due to error in the measuring method.

Emissions	Number of sources	Contamination Parameters	Units	Maximum Result						Limits
				1998	1999	2000	2001	2001 (Abr'01-Mar'02)	2002 (Abr'02-Mar'03)	
PROCESS										
SOLDERING	5	HCT (98)	Kg/h	0,37						3*
			mg/Nm ³	129,5						150*
		COV's (99-2002)	mgC/Nm ³		< 0,095 ⁽¹⁾	< 0,077 ⁽¹⁾	314 ⁽²⁾	314 ⁽²⁾	138,5	50*
		Pb	Kg/h	< 6,5 x 10 ⁻⁵	< 11,9 x 10 ⁻³	1,8 x 10 ⁻⁴	8,3 x 10 ⁻⁶	2,32 x 10 ⁻⁴	⁽³⁾	0,025*
			mg/Nm ³	< 8,2 x 10 ⁻³	6,9 x 10 ⁻⁵	0,04	0,04	0,04	⁽³⁾	5*
		Sn	Kg/h	< 2,6 x 10 ⁻⁴	< 6,9 x 10 ⁻⁴	4,2 x 10 ⁻⁴	3,49 x 10 ⁻⁴	6,7 x 10 ⁻⁴	⁽³⁾	0,025*
mg/Nm ³	< 8,7 x 10 ⁻²		< 0,12	< 0,06	0,06	0,11	⁽³⁾	5*		
VARNISHING	1	Partículas	mg/Nm ³	14,4	0,8	2,4	0,2	0,8	N.M.	150*
			HCT (98)	Kg/h	0,62					
			mg/Nm ³	168,7						150*
BOILERS	5	COV's (99-2002)	mgC/Nm ³		102,8	148,9	200,1 ⁽²⁾	345,5 ⁽²⁾	289,1	50*
		CO	ppm	7	11	18	29	52,9	52,9	500
		NO _x	ppm	75	90	43	85	85	65,7	300
RADIANT HEATING	6	CO	ppm	31	108	209	30	148	N.M.	500
		NO _x	ppm	43	35	43	4	20	N.M.	300
		COV's (99-2002)	mgC/Nm ³			75,4 ⁽¹⁾	10,9	10,9	15,4	50*
STICK COIL 1	1	Pb	Kg/h			< 3,3 x 10 ⁻⁵	7,8 x 10 ⁻⁶	7,8 x 10 ⁻⁶	⁽³⁾	0,025*
			mg/Nm ³			< 12,5 x 10 ⁻³	3,7 x 10 ⁻³	3,7 x 10 ⁻³	⁽³⁾	5*
		Sn	Kg/h			< 2,8 x 10 ⁻⁴	8,4 x 10 ⁻⁶	8,4 x 10 ⁻⁶	⁽³⁾	0,025*
			mg/Nm ³			< 0,11	4 x 10 ⁻³	4 x 10 ⁻³	⁽³⁾	5*
STICK COIL 2	1	Partículas	mg/Nm ³			2,9	2	2	N.M.	150*
STICK COIL 3	1	COV's (99-2002)	mgC/Nm ³			58,6 ⁽¹⁾	16,2	16,2	13,2	50*
AFM	1	COV's (99-2002)	mgC/Nm ³			150,7 ⁽¹⁾	25,9	25,9	12,5	50*
O2 SENSOR	2	COV's (99-2002)	mgC/Nm ³			8,4	N.M.	N.M.	7,6	50*
		Partículas	mg/Nm ³				3	3	5,2	50*
		CO	ppm				0,4	0,4	N.M.	150*
		NO _x	ppm				12	12	4,6	500
							4	4	0	300

Stick Coil 1: Plastic injection, soldering and resin level control.

Stick Coil 2: Curing oven

Stick Coil 3: Resin injection and machine cleaning.

AFM: Curing ovens

For the emissions of CO, NO_x and particles, the legal limits are those of Annex IV (Point 27) of Ordinance 833/75 of February 6th that enlarges upon Law 38/72 on Protection of the Atmospheric Environment.

As for the emissions of hydrocarbons, lead and tin, the limits of the German T.A. Luft regulations are used as reference limits.

Since 1999, the reference limits applied for volatile organic compounds (VOC's) are those set by Regulation 1999/13/CE of March 11 1999 for processes involving organic solvents and adhesives, although this regulation will not be applicable until 2007 year.

(2) Denso Barcelona, S.A. has prepared a plan to study the repercussions of this regulation and to try to reduce the emissions of VOC's in the varnishing and electronic components soldering processes.

(3) Pb and Sn are excluded to be analysed from septembre 2001, because the levels are very low. The affected sources are: 4, 5, 7, 16, 24 y 32.

NOISE

Controls on Internal and external noise levels are carried out periodically by Denso Barcelona. From the environmental point of view, only the external noise will be taken into account in this Statement. In the measurements carried out during the year 2002 around the perimeter of the plant, the limits set by the Municipal Ordinance of Sant Fruitós de Bages only were exceeded in one point, owing to the influence of the background noise produced by the traffic on the Sakura street.

Next, the values for noise pollution obtained annually during the measurements made around the perimeter of the plant are given.

Noise	Units Laeq	1998	1999	2000	2001	2002	Legal Limits
Day	Min - Máx dB (A)	45,8 - 72,9	44,3 - 63,1	45,7 - 64,2	45,5 - 72,4	37,1 - 58,5	65
Night	Min - Máx dB (A)	40,7 - 63,9	38,9 - 53,9	43,4 - 49,8	39,0 - 53,3	43,6 - 57,8 *	55

The limits applicable are those of the Municipal Ordinance of Sant Fruitós de Bages.

*Due to lorry and car transit on the streets of the industrial state.

WASTE

In the production process and auxiliary activities, waste is generated. The most representative forms are:

Waste	Origin
General waste not separated selectively	Production processes and auxiliary
Paper and cardboard	Production processes and auxiliary (packaging (office)
Epoxy Resin waste	Manufacturing process for ignition products and AFM
Wood (pallets and boxes)	Raw material packaging
Soldering waste (tin and lead)	Soldering (production of ignition and electronic products)
Scrap metal	Mainly production activities
Waste water treatment sludge	Biological purifying system
Solvents and other organic substances	Production processes (soldering, varnishing, cleaning)
Copper wire	Winding in the production process for ignition products
Empty drums	Packaging of raw material and auxiliary
Waste oils	Machinery maintenance
Plastic used in packaging and in process	Raw material packaging and plastic injection

Other wastes are also segregated, such as:

Electronic components and equipment (faulty material from the production process for electronic components, and scrapped computer equipment)

Glass and drink cans (selective collection of general waste)

Toner (from printers and photocopiers)

Electrical cable (maintenance activities)

Fluorescent light fittings

Batteries

Other special waste generated in small quantities:

Acid and alkaline solutions from maintenance and laboratory

Used cutting oil

Water with antifreeze

Empty polluted packaging (of small volume)

Polluted absorbent materials

In the chart below the annual values for the generation of the main waste in relation to production units are shown.

Type of Waste	UNITS	Quantity generated					
		1998	1999	2000	2001	2001 (Abr'01-Mar'02)	2002 (Abr'01-Mar'02)
General Waste	g waste / total prod.	57,1	49,6	40,8	30,4	25,1	20,4
Paper and cardboard	g waste / total prod.	18,7	18	14,4	11,5	10,6	11,8
Resin	g waste / total prod.	19,5	12,1	9,7	6,5	6,1	5,9
Wood	g waste / total prod.	8,8	4,5	7,1	2,0**	0,8	0,9
Tin and lead	g waste / total prod.	8	7	6,7	5,4	4,7	2,8
Scrap	g waste / total prod.	3,7	2,2	3,8	4,9*	4,7	3,6
Waste water treatment sludge	Kg waste / employees	29,4	19,4	155,4	141,7	121,3	126,8
Solvents	g waste / total prod.	4,2	3,6	3,4	4,2	4,1	2,8
Copper wire	g waste / total prod.	3	3,2	2,4	2,9	2	1,5
Drums and cans	Drums / 1000 total prod.	1	1,9	1,9	1,5	1,4	1,03
Waste oil	g waste / total prod.	0,6	0,2	0,5*	0,3	0,3	0,4
Plastic	g waste / total prod.	---	---	---	2,4	2,9	4,4

* Estimated data

** From mid-year is being managed as by-product

OTHER FACTORS RELATED TO THE ENVIRONMENTAL PERFORMANCE OF DNBA

EMERGENCY PLAN

Denso Barcelona, S.A. has an Emergency Plan and associated instructions that enable us to identify, respond to and prevent environmental accidents and larger-scale emergencies such as fires. Periodically, drills are carried out to check their effectiveness.

COMUNICATIONS AND COMPLAINTS

For the purpose of maintaining open relationships with society, Denso Barcelona, S.A. has a system for receiving and responding to any complaint or request for information related to environmental aspects of the activities carried out.

During fiscal year 2002 (April'02 - March'03) no complaint was received related with the environmental aspects, nevertheless some information applications from interested parts were received (from customers, official organism) which had been replied according to the internal procedures established.

ENVIRONMENTAL OBJECTIVES

ENVIRONMENTAL OBJECTIVES FOR THE YEAR 2002

Objectives established for 2002 year according with the points of the environmental policy, are the following:

1. Control & reduce the substances imparting environmental load.

1.1. Reduce the consumption of solvents (flux & IPA) and soldering material (lead & tin) used in the soldering process (Electronic Production Process) compared with 2001*.

-Flux consumption: 25 % reduction in g/pc

-IPA consumption: 40 % reduction in g/pc

-Pb / Sn consumption: 17% reduction in g/pc

Reduction in flux consumption has been not achieved but reduction in IPA consumption (28,6%) and reduction in Pb and Sn consumption (49%) has been achieved.

1.2. Reduce 7 % the VOC emission (IPA) due to the use of solvent in the soldering process (Electronic Production Process) compared with 2001*.

A reduction of 9 % has been achieved.

1.3. Reduce emission of VOC due to the use of solvent in the varnishing process (Electronic Production Process) **.

Take data during 2002 and set target for 2003.

It is not possible to set a reduction target with the data obtained.

1.4. Study global emission of VOC (according to VOC European Directive)

The emission of all exhausts with VOC have been investigated.

1.5. Get alternatives to eliminate Pb in Al alloy and Cr⁶⁺ according to the requirements of End of Life Vehicles Directive.

The proposals of alternative materials to Cr⁶⁺ from suppliers have been received. In case of lead in Al alloy it has been not necessary to get alternatives due to the change in the Directive requirements.

2. Strengthen co-operation with suppliers

Green Purchasing implementation (Activity started in 2001; complete implementation in 2005)

The manuals and procedures of the Management system have been adapted for the implementation of the Green Purchasing system. 56 % of Denso Barcelona, S.A. suppliers have achieved the certification ISO 14001 or EMAS.

3. Reduce and recycle waste

3.1. Reduce solder waste (Pb / Sn) and solvent waste (Flux & IPA) in the soldering process (Electronic Production Process) compared with 2001*.

Solder waste: 17 % reduction in g/pc

Solvent waste: 33 % reduction in g/pc

A reduction of 49% in the soldering waste and 52.7% in the solvent and flux has been achieved.

3.2. Reduce solvent waste in the varnishing process (Electronic Production Process)**.

Take data during 2002 and set target for 2003.

With the data obtained it is not possible to set reduction targets.

3.3. Reduce landfill waste 10 % in tones/sales compared with 2001 by increasing the plastic recycling.

A reduction of 12 % has been achieved.

4. Energy Conservation. Reduce energy consumption.

Reduce 1% CO₂ emission in Kg/Sales compared with 2001.

A reduction of 8.7 % has been achieved.

5. Reduce packaging material consumption and stabilize CO₂ emission during transportation.

5.1. Reduce 5 % non-returnable packaging consumption in Tones cardboard/sales compared with 2001.

5.2. Stabilize CO₂ emission in Tones/sales.

A reduction of 31% in the non returnable packaging (cardboard) consumption has been achieved due to the use of returnable packaging. It has been not achieved the target of CO₂ emission stabilization. CO₂ emission has been increased due the raw material transportation (routes increase).

(*) Implementation of new technology: new soldering machine and current machines modification

(**) Implementation of new technology: new sealer coating machine

ENVIRONMENTAL OBJECTIVES FOR THE YEAR 2003

1. Control & reduce the substances imparting environmental load.

1.1. Study activities to reduce the emission of VOC due to the use of solvents in the soldering and coating processes (Electronic Production Process).

1.2. Study lead-free implementation (Electronic Production process).

1.3. Start the implementation of a new coating material in order to reduce the VOC (Toluene & xylene) emission.

1.4. Comply with the end of life vehicle Directive requirements. Create Restricted Substances Report database.

2. Strengthen co-operation with suppliers

Green Purchasing implementation (Activity started in 2001; complete implementation in 2005)

Promote ISO 14001 suppliers certification (60 % suppliers with ISO 14.001 certification).

3. Reduce and recycle waste

3.1. Reduce landfill waste 5 % in tones/sales compared with 2002 (increasing plastic recycling).

3.2. Promote indirect landfill waste reduction.

3.3. Waste oil reduction

4. Energy Conservation. Reduce energy consumption.

Reduce 2 % CO₂ emission in t-C/Sales compared with 2002.

5. Reduce packaging material consumption and stabilize CO₂ emission during transportation.

5.1. Reduce 5 % non-returnable packaging consumption in Tones cardboard/sales compared with 2002.

5.2. Stabilize CO₂ emission in Tones/sales.

The present statement has been prepared according to the Regulation (EC) N° 761/2001 (EMAS)

The data included in the Statement (years 1998, 1999, 2000 and 2001) correspond to the period from January to December. From next years (since 2001), the data included correspond to the period from April to March (fiscal year).

This document is for public access and the Environmental Committee is responsible for updating and modifying it.

The next Environmental Statement will be issued during the first quarter of the year 2005; the data related to the period April 2003 – March 2004 will be included.

The verified version of this document is the spanish one and it has been verified on 20th of february of 2004.

Prepared by
Environmental Committee

Revised by
Prod. Eng. General Manager

Approved by
Managing Director



H. Kawabata

K. Ido

Other available information related with the activities of DENSO can be found in: DENSO Corporation Environmental & Social Report 2003.

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**DENSO BARCELONA, SA
Sant Fruitós de Bages**

This site has an environmental management system and its environmental performance is reported on to the public in accordance with the Community eco-management and audit scheme

GLOSSARY OF TERMS

ECU: Electronic Control Unit

Terminology used for the water pollution:

SS: Suspended solids

COD: Chemical Oxygen Demand

BOD₅: Biological Oxygen Demand after five days

Terminology used for the air pollution:

THC: Total hydrocarbons

VOC: Volatile Organic Compounds

CO: Carbon monoxide

NOx: Nitrogen oxides

Pb: Lead

Sn: Tin

CERTIFICATES

