Befesa Aluminio, S.L.

Erandio plant

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This document contains the environmental declaration of Befesa Aluminio, S.L. – Erandio plant for 2012. It has been drawn up as per environmental management standard ISO 14001:2004 and regulation (EC) 1221/2009 on the European Eco-Management & Audit Scheme (EMAS).

Contents

1. EMAS registration

1.1 Regulation (EC) nº 1221/2009

Regulation nº 1221/2009 on the EMAS (Eco-Management and Audit Scheme) enables organisations to sign up voluntarily to a community environmental management and audit system.

This regulation envisages three main undertakings:

- Internal control of environmental impacts of processes and registration under the basic assumption of compliance with the environmental legislation applicable.
- Continual reduction in impacts, defining, publishing and meeting goals and targets and monitoring results via regular environmental audits.
- Full transparency with regard to society and institutions.

1.2 Environmental declaration

This is the core element of the system, since it means making the company's environmental data available to society:

- Consumption of raw materials, water, electricity and fuel; emissions, effluents, waste, etc.
- Corporate environmental policy for assuring compliance with applicable regulations and a commitment to continuous improvement based on quantifiable targets and the prevention of pollution.
- Validation of system audits and certification of compliance with the said Regulation by an accredited certification organisation.

In short, it means telling society what we do, providing key data and assuring that we comply with environmental requirements.

1.3 Befesa Aluminio, S.L. as a member of the system

Befesa Aluminio, S.L. with NACE Code 2453 (casting of light metals) joined the system voluntarily as a way of demonstrating to society that it is committed to the environment in its day-to-day operations. Those operations comprise the following:

"Solid and liquid aluminium alloys production. Aluminium waste treatments. Design, development and installation of equipment and technology for the aluminium industry. Trading of by-products of aluminium and other non ferric metals".

2. The company's activities, products and services

Befesa Aluminio, S.L. comprises 3 internationally renowned plants in Erandio (Bizkaia), Les Franqueses del Vallés (Barcelona) and Valladolid. The first two ones are aluminium refineries and the third one a salt slag recovery company. All these plants work in the eco-industry sector, recycling, recovering and valorising aluminium industry waste of all types. The total recycling process operated enables the free metal to be recovered from all the materials processed, along with the oxide always found with it. This provides an important alternative to primary aluminium (which takes a great deal of energy to obtain) and an endless source of metals that do not need to be mined, thus helping slow the depletion of the earth's natural resources.

Operations at Befesa Aluminio, S.L. are an essential step in the life-cycle of aluminium. Operations at primary aluminium production, processing and finishing plants and aluminium foundries in general would be unviable without firms such as Befesa Aluminio, S.L. to treat, recover and recycle the waste that they produce. Befesa Aluminio, S.L. turns that waste into usable raw materials. From the outset it has focused on producing aluminium alloys to a wide range of specifications for the injection moulding of parts for the automotive industry, domestic appliances and construction.

All this has made Befesa Aluminio, S.L. the leading company in its field in Spain and one of the biggest in Europe. The company's links with world-renowned corporations and groups and its use of the knowledge that it has acquired has helped it to secure suppliers and customers all over the world, including automotive manufacturers and the foundries that act as their suppliers.

3. Environmental management system

Our EMS comprises the following:

- Environment policy: this formally describes the guidelines and targets of Befesa Aluminio, S.L. in regard to the environment.

- Environmental management programme: this lists the operations required for those targets to be met.

- EMS documentation, consisting of:

  - Environment manual: this describes the company's responsibilities and how checks are run on all operations and parties that have or may potentially have an impact on the environment.

  - Procedures: these describe how the operations listed in the environment manual must be carried out.

- Internal environmental audits as a way of helping the management to assess the implementation and effectiveness of the EMS in place and to identify opportunities for improvement.

- Annual management reviews of the system to assess its implementation and effectiveness and set new targets for continuous improvement. Assessment of environmental aspects.

- A list of legislation and an indication and assessment of all the applicable requirements of law.

And there are three main objectives:

- An undertaking to comply with the legal and other requirements applicable to the plant.
- To conduct our recycling operations in an environmentally-friendly manner, paying particular attention to those activities and products that may entail risks for the environment.
- Continuous improvement in environmental terms.

These objectives are drawn from the guidelines laid down in our management policy

Quality, safety & environment policy

As a leading aluminium recycler, Befesa Aluminio, S.L. acknowledges its responsibility and its important role in promoting the quality of its products and processes, protecting the environment, assuring the health and safety of its employees and fostering sustainable development.

The company management realise that to operate successfully they must fully satisfy their end customers, including the recipients of products and services, the society in which the company operates and, of course, direct and indirect employees.

In line with this ethos, we have also taken on the following commitments:

- To use the best available technologies and resources suited to the production process, so as to ensure compliance with legal and regulatory requirements as regards employee health and safety and pollution prevention, and to meet specific customer requirements in terms of providing products of the quality standards expected.
- To apply continuous improvement in production processes to ensure that products are of the standards expected, using proven, reliable techniques and expertise, monitoring and minimising environmental impacts and reducing, monitoring and eliminating risks. To do this, quantifiable annual targets are set for quality, safety, health and environmental issues. These targets are reviewed and assessed regularly by the general manager of Befesa Aluminio, S.L.
- To involve all company employees actively in the improvement of products and processes, the reduction of environmental impacts and the reduction, monitoring and elimination of risks by means of a suitable internal communication system.
- To establish the basis for a programme of training, research and prevention of defects and incidents through systematic, planned actions.
- To establish and maintain an integrated management system covering quality, prevention and environmental matters that can be reviewed and audited in line with internationally recognised standards.

The general management of Befesa Aluminio, S.L. undertakes to draw up a suitable training and communication plan to ensure that this policy is understood and accepted by all in-house personnel and contract workers.

This policy is available on request to any other interested party.

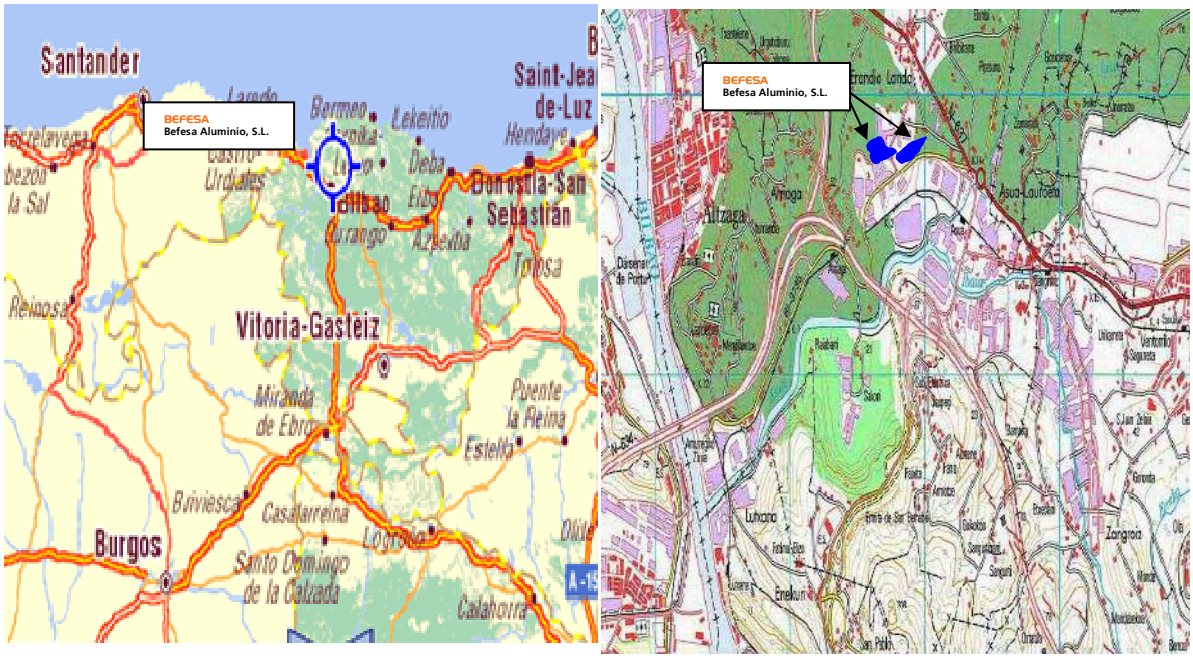
The General Manager Erandio May
2010

Pursuant to ISO standard 14001: 2004, the managing director of Befesa Aluminio, S.L. has appointed the following person to oversee the application and maintenance of the environmental management system in place:

- **Oskar de Diego Rodríguez, Environmental Manager,** as the management representative in the establishment, implementation and upkeep of the environmental management system, with responsibility for ensuring compliance with all applicable environmental requirements.

Quality, risk prevention and environmental matters are currently managed as an integrated system at the company, to simplify efforts, to achieve joint progress in all three areas and at the same time maintain strict standards in all three individual concepts, so as not to compromise on welfare of future generations.

4. Befesa Aluminio, S.L.- Erandio plant



The Befesa Aluminio S.L. plant in Erandio makes the following end products:

* 10 kg ingots of aluminium and aluminium alloys for moulding.
* 600 kg ingots for remelting.
* Aluminium in liquid form.

The Erandio plant also builds and develops its own in-house technology for recycling aluminium in all phases, and has built turnkey facilities in over 40 countries all around the world.

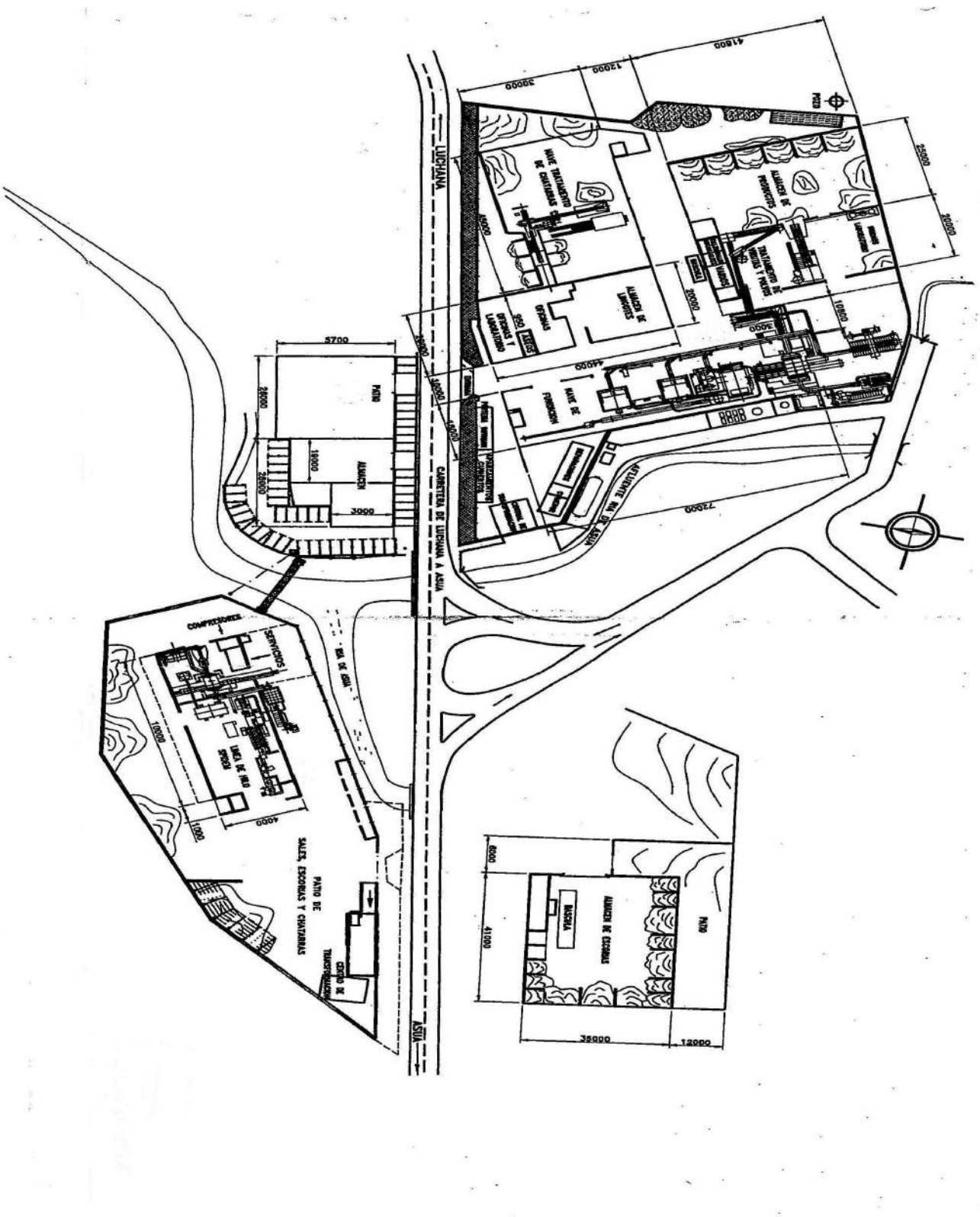


Illustration 1: Layout of the facilities at the Erandio plant.

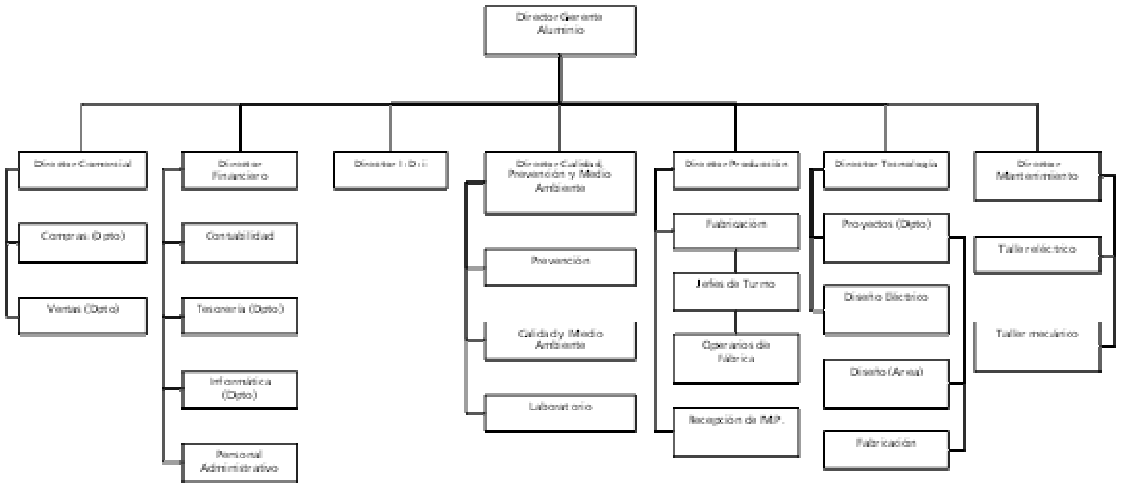


Illustration 2: Organization chart of Erandio plant.

The recycling and recovery operations at the Erandio plant comprise two main processes: smelting of material in rotary furnaces and then refining of the end products in reverberatory furnaces. Both these processes are carried out using equipment classed as BAT (Best Available Technology) in the European Commission's Reference Document on Best Available Technologies for non-ferrous metallurgy.

The first step in the production process is a correct selection of the right raw materials. These include offcuts, cables, sumps, pans, cans, foil, chippings, shavings and aluminium industry scrap and waste in general. After selection, these raw materials are smelted to the degree required to obtaining the approximate specification indicated by the end customer, using rotary furnaces to which salts are added as flux and to protect the molten aluminium. This smelting does not just heat the raw materials to molten form: it also dissolved metal elements in suspension and fosters certain reactions that clean the

material. It is this last feature that distinguishes rotary furnaces from other types of furnace. Once it has been confirmed that the furnace temperature is correct, the material is in liquid form and the quality of the supernatant flux is as expected, the furnace is emptied in two stages: first the metal is drawn off and then the molten flux or salt slag.

The fumes produced during smelting are exhausted off by treatment systems that comprise coolers and bag filters where solid particles are retained and, at the same time, acidic combustion fumes are neutralised by the controlled addition of sodium bicarbonate or lime.

All the salt slag produced by the salts used in the smelting process is recycled and recovered to produce an aluminium oxide called Paval, which has numerous uses in different industrial sectors (cement industry, ceramic industry, insulation industry, etc.), thus completing the cycle of aluminium waste recovery.

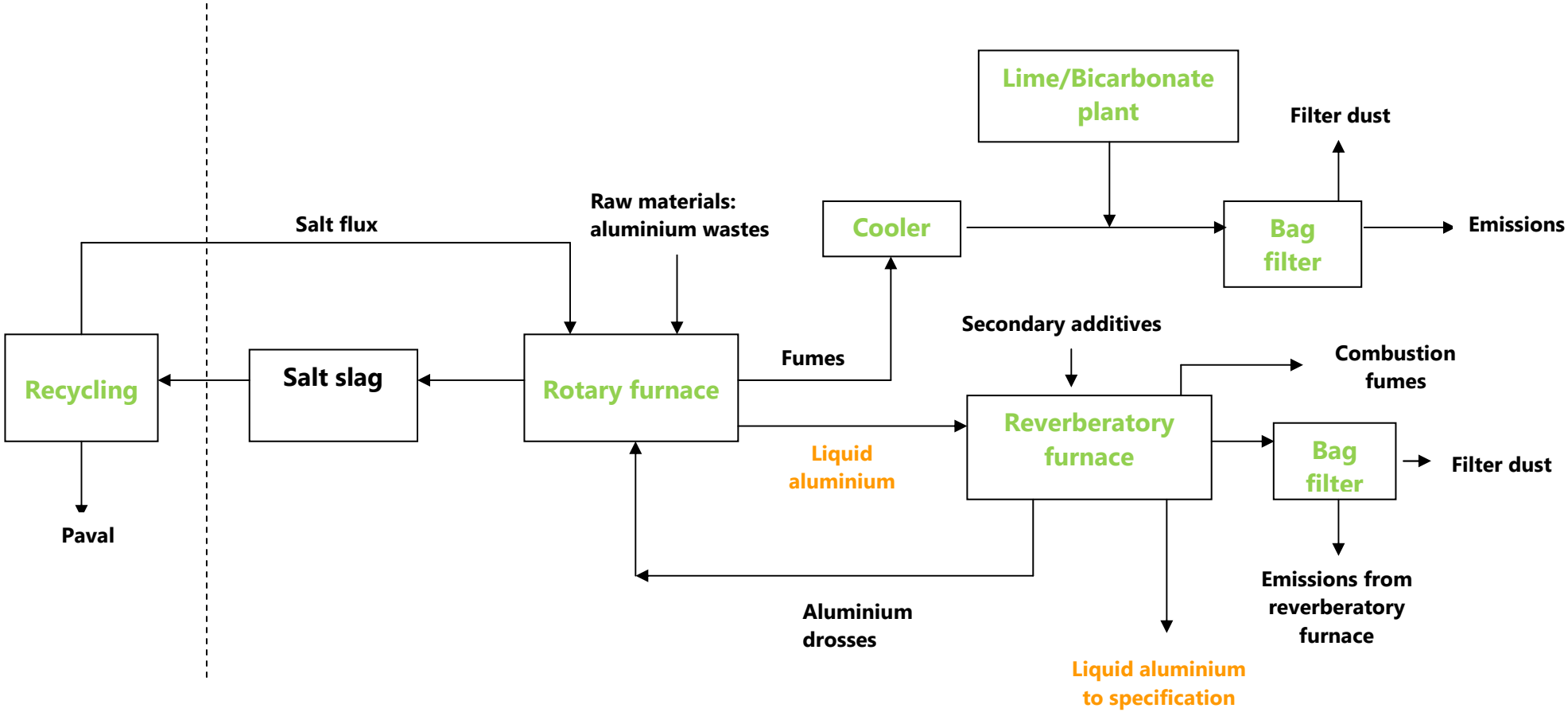


Illustration 3: Flow diagram of the process for obtaining aluminium in liquid form.

Once they have been melted in the rotary furnaces, the raw materials go on to phase two in reverberatory furnaces, where they are adjusted to the exact target specifications by adding secondary additives such as Si, Cu or Mg. Furnaces of this type are particularly suited to this last phase of production, since they provide metal that is at rest and the quality parameters of which can be adjusted under controlled heat conditions.

Once the slag has been skimmed off and the temperature adjusted, the metal is ready for pouring. Depending on the end product desired, the molten metal is sent to the molten aluminium facility for transportation by road, to the pouring wheels for pouring into ingots. The pouring wheels comprise a chain of ingot moulds that guarantee the reliable, rapid production of ingots with high surface quality. The ingots are cooled, tipped out and conveyed to a machine that stacks them fully automatically in tiers, using a powerful computer that can form packages of different shapes to meet the requirements of each customer.

The water used during the cooling process is recirculated via cooling systems fitted with parallel filter. The water used to bleed the filter systems during cleaning is treated to the same standard as run-off water and evacuated to the municipal main sewer via a single discharge point, which meets all the constraints imposed by the relevant integrated environmental authorization.

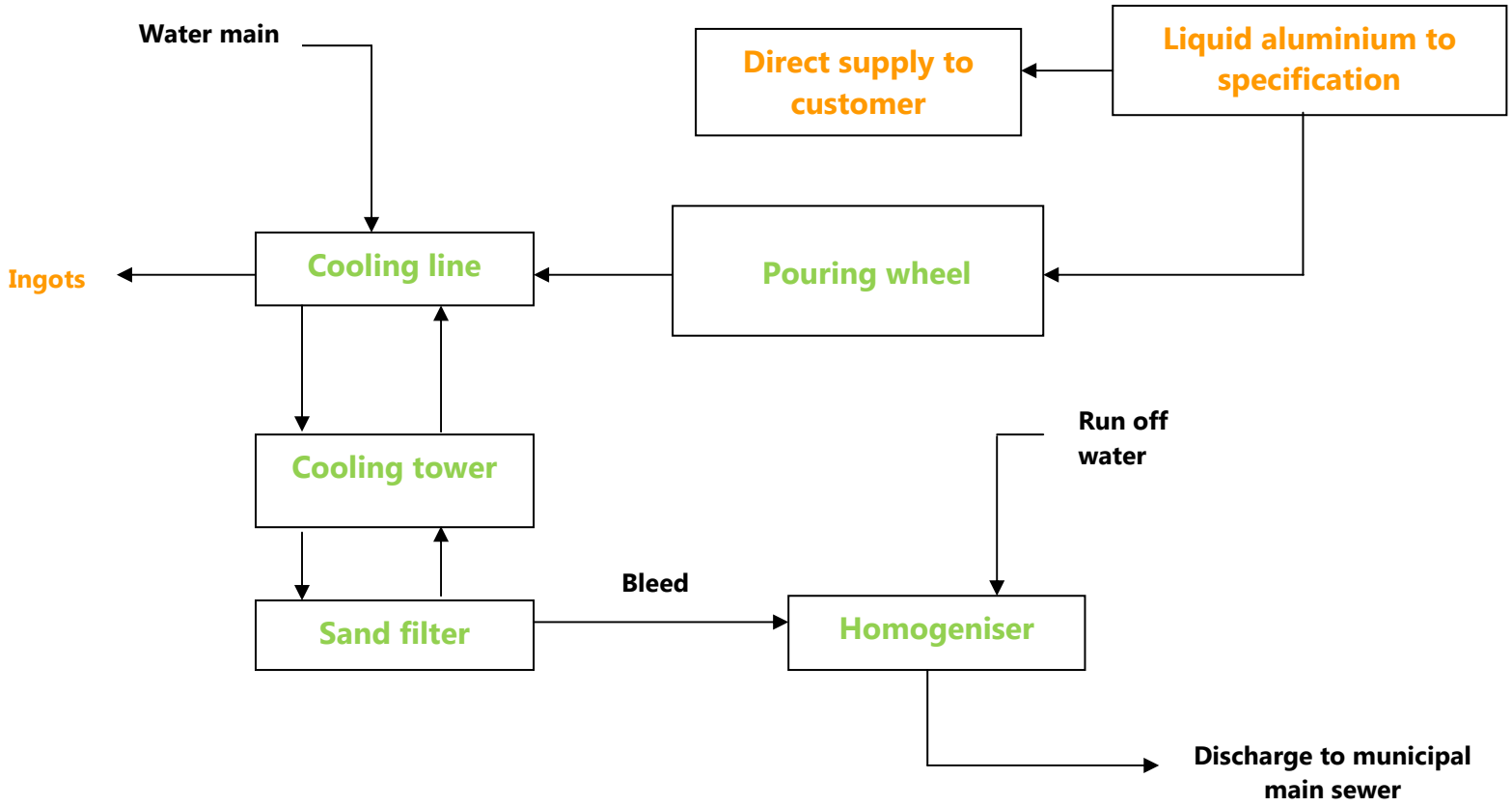


Illustration 4: Flow diagram of the ingot and liquid aluminium manufacturing process.

The company has two manufacturing lines and the average annual output at the Erandio plant from 2011 to 2013 was 43,284 t of finished product (see page 28), 50 % of it destined for foundries in the Basque Country and 30 % for foreign customers.

All products supplied by the company undergo final quality checks before shipping and are perfectly identified to ensure full traceability in terms of manufacturing processes, raw materials used and checks made. All this is handled via the company's quality management system, which has been certified as ISO 9001 compliant since 1995.

Moreover, in line with efforts to conserve natural resources and protect the environment, we believe that our operations should have as little impact on the local area as possible. Accordingly, we decided in 1999 to implement an ISO 14001 compliant environmental management system (EMS). In 2004 this system was verified as per EMAS with registration number ES-EU-000023.

5. Representative environmental aspects of Erandio´s plant

The following environmental aspects are classed as representative:

A) Emissions into the atmosphere

There are currently five hotspots at the plant, in the facilities where the production process takes place: the combustion fumes from rotary furnace nº 1, the combustion fumes from rotary furnace nº 2, fumes from the reverberatory furnace loading pit area, combustion fumes from the reverberatory furnaces and the laboratory furnaces.

An officially authorised certification laboratory (OCA) takes regular samples of emissions at these hot spots, and analyses the compounds required as per the integrated environmental authorization.

In-house procedures have been developed to ensure that the treatment systems associated with these hot spots work properly. These procedures, which form part of the integrated environmental management system, establish what continuous and periodic checks need to be made at plant level to detect any anomaly, and what corrective action is required.

B) Waste production

The company holds an integrated environmental authorization, which includes the former hazardous and indirect waste producer permit (EU/1/4-97).

- **Hazardous wastes**

The main hazardous wastes produced by the company are the following:

- Salt slag: This originates from the use of salts (ClNa, ClK) as a flux to prevent the molten aluminium from oxidising inside the furnaces on coming into contact with the atmosphere. All this salt slag is recycled in a fully integrated aluminium waste treatment process carried out at Befesa, giving rise to salts that can be reused in production processes and an inert waste rich in aluminium oxide, known as Paval, which has numerous applications in the industry.

- Filter dust: This originates from the combustion fumes run through the treatment systems in place at the plant. It is stored in big-bags in a roofed area until its removal by an authorised waste manager.

- Aluminium dross: This originates from the oxidation of aluminium in the reverberatory furnaces with loading pits. It is used as a raw material in further production processes, and the company holds the relevant permit for managing this material.

- Filter bags: These are part of the combustion gas treatment system. Damaged and spent bags are replaced and managed in-house, for which the company holds the relevant permits.

- Spent oil: This comes from facility and machinery maintenance operations. It is stored in properly identified, dated drums to await shipment to an authorised waste manager.

- Empty metal and plastic packaging: containers that once held paint, solvent, oil, etc. are stored in properly identified dated cages for shipment to an authorised waste manager.

- Industrial aerosols: This waste comes from the sprays used to identify stacks of the finished product in ingot form. They are stored in properly identified, dated big-bags to await shipment to an authorised waste manager.

- Absorbents, rags and contaminated clothing: These come from maintenance operations. They are stored in properly identified, dated drums to await final shipment to authorised waste manager.

- Spent batteries and fuel cells: dry mercury, button-type batteries from calculators and clocks along with salt and alkaline batteries are collected selectively.

- Lamps: lamps changed during maintenance operations (due to breakage, fusing, etc.) are stored in a properly identified container.

The company holds all the relevant acceptance documents from each of the authorised waste managers that handle these hazardous wastes.

- **Inert wastes**

The inert industrial waste produced at the plant comes mainly from repair, renovation and improvement work. It is managed as follows:

- Scrap: This is stored in a designated container. When the container is full a company specialising in the collection of this type of material is called in.

- Refractory bricks, rubble, wood, plastic and rubber: Waste refractory bricks come from maintenance work on the linings of the rotary furnaces and the reverberatory furnaces. Rubble, wood, plastic and rubber waste come from civil work done at the company. This type of waste is landfilled.

C) Depletion of natural resources

The company's integrated management system includes a method for identifying, monitoring and controlling the resources used during the manufacturing processes,

being the most representative ones, oxygen, natural gas, electricity, water, raw materials and fluxes.

6. Significant environmental aspects of Erandio´s plant

Direct and indirect environmental aspects are assessed yearly as a basis for drawing up environmental targets. The criteria applied include the likelihood and severity, and the degree of significance of each individual aspect is determined. This helps reveal the areas where future efforts need to be focused so as to get environmental impact of the company to be minimised.

Taken into account the criteria of likelihood and severity mentioned before and the methodology used by the company in the internal evaluation process of their environment aspects, the significant aspects for 2013 are as follows:

- Confine emissions of SO_2, NO_x, HCl, HF, heavy metals and solid particles, as a consequence of usual combustion processes in rotary, reverberatory and laboratory furnaces.
- Potential generation of legionella as a consequence of an incorrect maintenance of cooling systems and domestic water.

For all the significant aspects, Befesa Aluminio, S.L. defines a strict and periodic control, associating strategic objectives and environmental indicators of improvement so as to guarantee the present and the future environmental performance of the company.

7. Outline of environmental targets and goals 2013

Environmental targets are set annually and laid out in the annual environment plan, which also indicates the goals associated with each target and the human and material resources allocated. The environmental targets set for 2012 are listed below, with a brief outline of the extent to which they were met:

- **To achieve a 2 % decrease in total GHG emissions associated with the company's production processes.**

At the commencement of 2013 a joint quantitative target was set for minimising GHG emissions at all three Befesa Aluminio, S.L. plants. This target was associated with the two different scopes envisaged in the company's inventories: (1) direct emissions by the company; and (2) indirect emissions by the company. The calculations for these emissions in 2013 show that the company has not met its emission reduction target, achieving a relative reduction percentage of 0.034 % (0.2965 teq CO_2/ t in 2013 vs 0.2966 teq CO_2/ t in 2012). This was due to the increase of natural gas consumptions (direct emissions) and electricity (indirect emissions) as a consequence of the relative increase of liquid aluminium supplies.

- **To achieve a 2 % decrease in total natural gas consumption associated with the refinery's production processes.**

Natural gas consumption in 2013 was 1.32 MWh/ t, slightly up on the figure of 1.29 MWh/ t in 2012. This mentioned increase was due to the relative increase of liquid aluminium supplies which requires more heating and therefore uses more gas. Thanks to the adjustments made to the production process and to a general increase in productivity compared to previous years, resulted in a small decrease in energy efficiency (in terms of gas consumption) of only 2.33 %.

- **To achieve a 1 % drop in the amount of salt slag produced in the course of the refinery's production processes.**

This target was met, mainly thanks to the nature of the raw materials used to obtain our end products and to the continuous improvements in the quality of the flux salts used in our production processes as a result of research in our R&D process. The amount of salt slag produced in 2013 was 0.70 t/ t, compared with 0.71 t/ t in 2012.

- **To achieve a 2 % drop in electricity consumption associated with the refinery's production processes.**

Electricity consumption in 2013 has increased slightly compares with values in 2012, mainly due to the relative increase in liquid aluminium supplies mentioned before. Relative consumption in 2013 was 0.073 MWh/ t, what means a decrease of energy efficiency of 2.82 % compared to 0.071 MWh/ t in 2012.

- **To achieve a 2 % drop in the amount of flux used in the refinery's production processes.**

Flux consumption in 2013 was 0.34 t/ t, down by 10.53 % on the figure of 0.38 t/ t for 2012. The target set was met thanks to the same actions indicated above in regard to salt slag, i.e. the type of materials used and the quality of the salts used as flux.

- **To achieve a 2 % drop in the amount of oxygen used in the refinery**'s **production processes.**

Oxygen consumption in 2013 was 0.17 t/ t, 5.55 % less than the figure of 0.28 t/ t for 2012. The target was attained thanks to process management improvements made

throughout the year and to improvements in market demand that directly affected the energy efficiency of our processes.

- **To achieve a 2 % drop in the amount of gasoil used in the refinery** ´s **production processes.**

Gasoil consumption in 2013 was 1.83 L/ t, compares with 1.82 L/ t for 2012. Target has not been achieved, maintaining gasoil consumption in line with values reported in previous years.

- **To achieve a 2 % drop in the amount of water used in the refinery**'s **production processes.**

Water consumption in 2013 totalled 0.33 m^3/ t, 37.5 % more than the 0.24 m^3/ t consumed in 2012. This target was not attained mainly because of the installation of a new cooling system in 2013 associated to a new casting line. This generated an increase of water consumption as a consequence of the refinement process of this new equipment.

- **To cut total fume emissions from smokestacks by 2 %.**

Pollutant emissions from the hotspots at the facilities in 2013 have decreased to 0.55 kg/ t which means a reduction of 5.17 % versus 2012 (0.58 kg/ t). This includes HCl, HF, NO_x, SO_2 and solid particles. The target has been achieved.

- **To cut the pollutant load in waste water discharges by 2 %.**

The total pollutant load in the waste water discharged in 2013 including SST, NH_3, Zn, Fe and Cu was 3.55 g/ t, 4.71 % more than the 3.39% for 2012. Nevertheless, all

the controlled parameters are under permitted limits included in the integrated environmental authorization of the company. During 2014, Befesa will keep on working in their cleaning processes focusing in the improvement of the pollutant load in waste water.

- **To cut the amount of filter dust produced by 1 %.**

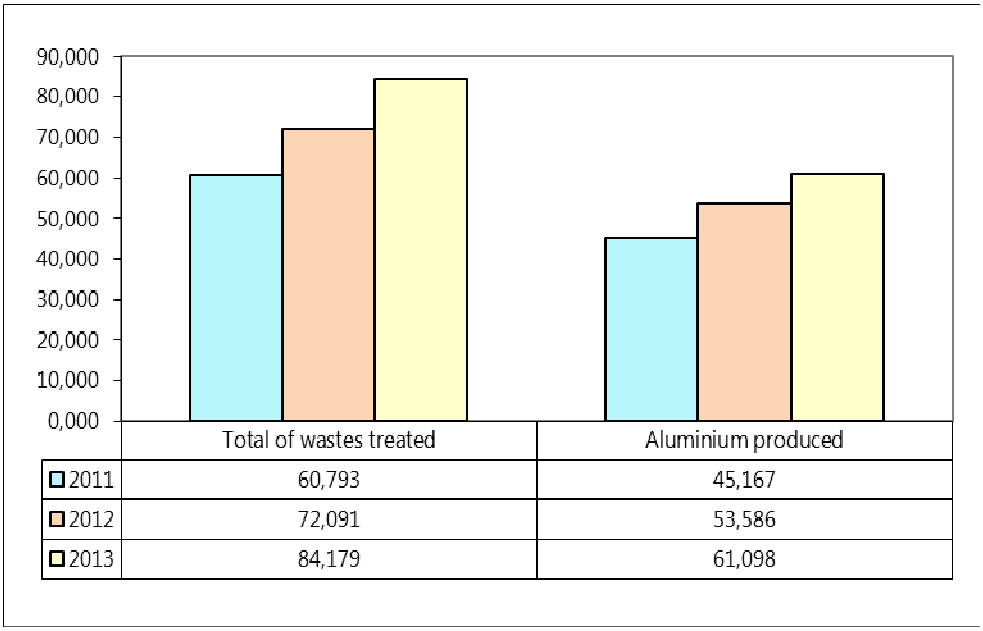
The ratio of filter dust to end products produced in 2013 was 0.018 t/ t, 5.88 % up on the figure of 0.017 t/ t recorded from 2012. This increase was mainly due to the use of more dusty raw materials used in the manufacturing processes.

8. Environmental performance of the company

The environmental performance of the company is outlined below.

8.1 **Aluminium waste recycling for aluminium recovery**

All incoming materials except fluxes (NaCl and KCl) are classed as waste products under current Spanish and European regulations. They come mainly from other primary and secondary aluminium smelting facilities and from aluminium scrap dealers who obtain them from the machining, vehicle breaking, domestic appliance and offcut markets. The underlying purpose of our whole production process is to recover all these secondary waste products as a direct alternative to primary aluminium obtained by processing natural resources.
The total quantity of waste processed in the last three years is indicated below, along with the quantity of secondary aluminium obtained from the company's recycling operations.



	Total of wastes treated	Aluminium produced
2011	60,793	45,167
2012	72,091	53,586
2013	84,179	61,098

Graphic 1: Comparison of waste treated and aluminium produced (t) in the last 3 years

8.2 Energy consumption

Energy consumption in the production process over the past three years is indicated below in absolute terms (MWh) and relative terms (amount per tonne of product produced). In 2013 energy consumption from renewable sources accounted for 26.8 %. This is shown as part of the total electricity consumption.

- **Natural gas**

Natural gas is used as fuel in the smelting and refining processes in the rotary and reverberatory furnaces. It is supplied from an RMS (Regulating and Metering Station) with a capacity of 2,825 m^3/ h and distribution pressure of 2.5 kg/ cm^2. The permit for entry into service of the station is dated January 2, 1992.

Natural gas	2011	2012	2013
Consumption (MWh)	66,378.8	69,173.2	80,772.2
Relative consumption (MWh/ t)	1.47	1.29	1.32

The amount of natural gas consumed per tonne of product manufactured increased slightly from 2012 to 2013, due to the fact that the company concentrated more on selling aluminium in liquid form, which requires more heating for its final supply than the solid form and therefore needs more gas. Nevertheless, adjustments made to the production process and main process facilities and an increased demand from the market compared to previous years, resulted in a slightly decrease in general energy efficiency.

- **Electricity**

Electricity is supplied to the plant from a 2,500 kW transformer centre whose control and distribution panel is located in a properly delimited area, and from a 2,000 kW open-air substation which is suitably signposted and separated from the rest of the plant. 220 and 380 V mains voltages are available throughout the plant.

Electricity	**2011**	**2012**	**2013**
Consumption (MWh)	3,327.2	3,802.1	4,434.2
Relative consumption (MWh/ t)	0.074	0.071	0.073

Electricity consumption per tonne of product manufactured also increased in 2013, mainly due to the relative increase in the liquid aluminium supplies compared with previous years.

8.3 Ancillary material consumption

Energy consumption in the production process over the past three years is indicated below in absolute terms (t) and relative terms (amount per tonne of product produced) for the three main ancillary materials used.

- **Salt flux**

The flux used is mainly a blend of NaCl and KCl which is fed into the rotary furnaces along with the main raw materials. Its job is to protect molten aluminium from unwanted oxidation and to absorb any impurities contained in the raw materials used. This flux gives rise to a hazardous waste known as salt slag, all of which is

recycled within Befesa to produce an aluminium oxide that has numerous applications in the industry.

Salt flux	2011	2012	2013
Consumption (t)	19,436	20,203	20,565
Relative consumption (t/ t)	0.43	0.38	0.34

The amount of flux used relative to the amount of end product decreased considerably from 2012 to 2013, mainly due to the type of raw materials used to make the end product and to improvements in the quality of the flux itself, achieved thanks to research by our own R&D process.

- **Oxygen**

There are two oxygen storage tanks at the plant, which are owned by the oxygen supplier. Oxygen is used as part of the fuel for the smelting process in the rotary furnaces. The storage tanks are in a fenced-off area outside the plant itself. An oxygen distribution network runs throughout the plant.

Oxygen	2011	2012	2013
Consumption (t)	9,817.5	9,473.2	9,550.6
Relative consumption (t/ t)	0.22	0.18	0.17

Specific oxygen consumption in 2013 was down on the figure for 2012, thus proving that the improvements made in the facilities during the year and the increase in market demand have helped to achieve the increases in efficiency desired.

8.4 Water consumption

At the Erandio plant there is no pre-treatment of incoming water. Nor does the plant take water from any public well, spring or other watercourse. All the water used in the production processes and at the offices is taken from the municipal mains network run by the local water board: Consorcio de Aguas Bilbao-Bizkaia.

Industrial water is used for cooling the molten metal on pouring in the aluminium ingot manufacturing line. It is recycled through semi-enclosed circuits where it is cooled in independent cooling towers to ready it for reuse. Almost 100 % of this water is recirculated (the exception being that used for back-washing the sand filters parallel to the cooling towers). The water consumption figures in the table below thus reflect the amount of water that evaporates during the process described. It is calculated that 90 % of the water used in cooling processes evaporates.

Office water consumption includes the water consumed at offices, the workshop, laboratory and the changing rooms.

The company has a general water meter and a number of subsidiary meters distributed around the plant that indicate the total amount of incoming water and how much is used by each separate facility or process.

Water	**2011**	**2012**	**2013**
Consumption (m^3)	11,385	13,158	20,429
Relative consumption (m^3/ t)	0.25	0.24	0.33

The ratio of water consumption to product output in 2013 was bigger to that in 2012 as a consequence of the installation of a new cooling system associated to a

new casting line that has been increasing its production capacity all over 2013.

8.5 Waste management

The trends for the main streams of waste produced and managed over the past three years are shown in the following table:

Waste managed	2011	2012	2013
Salt slag produced (t)	33,989	38,280	42,752
Ratio of salt slag to end product (t/ t)	0.75	0.71	0.70
Filter dust produced (t)	935	885	1,000
Ratio of filter dust to end product (t/ t)	0.021	0.017	0.018
Aluminium dross produced (t) (*)	1,761	2,000	2,300
Ratio of aluminium dross to end product (t/ t) (*)	0.039	0.037	0.038

(*) Estimated figure.

The specific amounts of salt slag produced decreased mainly due to the better quality of the salt used as fluxes in manufacturing processes. On the other hand the specific amounts of filter dust increased slightly due to the type of raw materials used to make the end products.

8.6 Impact on the biodiversity

The total surface area of the plant is 36,614 m^2. The size of the site has not changed in the past three years, and the ratio of land area occupied per tonne of product manufactured is as shown below.

Land area	2011	2012	2013
Relative land area (m^2/ t)	0.72	0.61	0.53

8.7 Emission of pollutants into the atmosphere

8.7.1 Greenhouse gases (GHGs)

Befesa Aluminio, S.L. set up an overall GHG emission inventory in 2008 for its three aluminium plants. This inventory calculates both direct and indirect emissions using a method explained on ISO standard 14064. An independent verification report is available for Befesa Aluminio, S.L. inventory.

"Direct emissions" are defined as emissions from sources under the control of the company, e.g. from the combustion process in its furnaces, from vehicles and machinery, from process equipment and leaks from equipment and facilities.

The figures for direct emissions over the past two years are shown in the following table:

GHG emissions	2011	2012	2013
Annual total for direct emissions (t CO_2 eq)	33,908.91	30,700.85	30,576.74
Relative annual total for direct emissions (t CO_2 eq/ t)	0.2872	0.2675	0.2683

8.7.2 Emissions of other pollutants into atmosphere

Total SO_2, NO_x and particle emissions for the past 3 years and the ratio of emissions per tonne of product manufactured are shown in the following table:

Emissions of other pollutants	SO_2			NO_x			Solid particles		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Emissions (t)	12.01	7.93	8.33	51.82	21.22	23.18	1.02	0.87	1.17
Relative emissions (kg/ t)	0.27	0.15	0.14	1.15	0.40	0.38	0.023	0.016	0.019

8.8 Fulfillment of environmental provisions of law

8.8.1 Emission hotspots

The tables below show the measurements taken over the past 3 years at all the hotspots at the plant for the parameters subject to limits as per the integrated environmental authorization, and a comparison with the maximum permitted levels.

- **Combustion fumes from rotary furnaces nº 1 and nº 2**

  The treated fumes from the rotary furnaces are expelled through these hotspots. These furnaces use a blend of natural gas and oxygen to smelt materials and adjust process temperatures. The first part of the treatment systems comprises a cooler which brings down the temperature of the

fumes from the combustion process. In the second part the cooled fumes are sent through a bag filter where solid particles are retained and acid fumes are neutralised by the controlled addition of sodium bicarbonate or lime.

Parameters		SO_2	NO_x	HCl	HF	CO	Zn+Pb+Cr+Cu+Mn	Ni+As	Cd+Hg	Solid particles
Limit as per integrated environmental authorization (mg/ Nm^3)		130	616.2	30	5	625	5	1	0.2	20
Average for rotary furnace nº1 (mg/ Nm^3)	**2011**	20	71.46	19.9	1.71	190.83	0.44	0.023	0.0013	3.5
	2012	20	117.4	6.72	0.45	282.08	--	--	--	3.62
	2013	20	129.05	6.24	1.14	205.81	0.16	0.008	0.0027	3.76
Average for rotary furnace nº2 (mg/ Nm^3)	**2011**	20	152.3	9.67	0.06	83.54	0.173	0.025	0.005	0.93
	2012	20	30.81	0.54	0.84	130.42	--	--	--	1.80
	2013	20	30.81	0.39	0.03	221.44	0.12	0.006	0.0015	1.90

In 2013 all the controlled parameters have been under the permitted limits included in the integrated environmental authorization of the company.

- **Combustion fumes from reverberatory furnaces**

Reverberatory furnaces also use a blend of natural gas and oxygen as fuel. The combustion fumes produced in the combustion chambers of

reverberatory furnaces are exhausted directly to the atmosphere, because only clean raw materials with high metal content are smelted in them.

Parameters		SO_2	NO_x	HCl	HF	CO	Zn+Pb+Cr+Cu+Mn	Ni+As	Cd+Hg	Solid particles
Limit as per integrated environmental authorization (mg/ Nm^3)		130	616.2	30	5	625	5	1	0.2	20
Average for reverberatory furnaces (mg/ Nm^3)	2011	20	30.81	2.18	1.50	18.75	2.025	0.007	0.018	5.83
	2012	20	30.81	0.59	0.31	18.75	--	--	--	7.43
	2013	20	32.70	0.77	0.11	18.75	0.6559	0.003	0.002	6.56

In 2013, all measurements were under specification.

- **Reverberatory furnace loading pit area**

In view of the type of emissions produced at the reverberatory furnace loading pits, the filter system comprises merely a bag filter to eliminate any solid particles in suspension. There is no need for preliminary cooling of fumes.

Parameters		SO_2	NO_x	HCl	HF	CO	Zn+Pb+Cr+Cu+Mn	Ni+As	Cd+Hg	Solid particles
Limit as per integrated environmental authorization (mg/ Nm^3)		130	616.2	30	5	625	5	1	0.2	20
Average for reverberatory furnace loading pits (mg/ Nm^3)	2011	20	30.81	1.92	0.35	34.79	0.286	0.024	0.0027	1.00
	2012	20	30.81	2.08	0.12	18.75	--	--	--	0.74
	2013	20	30.81	1.17	0.08	39.38	0.311	0.002	0.0012	2.06

In 2013, all measurements were under specification.

- **Laboratory furnaces**

The laboratory facility has two small crucible furnaces which are used to characterise raw materials on arrival. The treatment system in place comprises a bag filter that retains solid particles. Measurements are made every two years.

Parameters		HCl
Limit as per integrated environmental authorization (mg/ Nm^3)		30
Figures for laboratory furnaces (mg/ Nm^3)	**2011**	1.42
	2012	--
	2013	1.76

8.8.2 Emissions discharge to mains drainage

The water outlets from the plant are grouped by water type as follows:

- Industrial water

  This is water from the semi-enclosed cooling circuits (occasional back-wash bleeds to clean cooling tower filters) and run-off water collected in the plant.

- Domestic water

  This is from the sanitary facilities in the offices and changing rooms.

All these outlets were connected to the Consorcio de Aguas de Bilbao municipal main sewer early in 2007.

The company now has a single discharge point for industrial and domestic water, which flows directly into the municipal sewer. Water discharge for 2013 achieved the figure of 11,326 m^3.

The water discharged is analysed every three months by Consorcio de Aguas de Bilbao itself. Values referred in the following table are averages of the four analysis made during the year.

The readings taken over the last three years by this organisation are shown below, along with the limits set in the integrated environmental authorization:

Parameters	Limits set in integrated environmental authorization	Average readings for discharges		
		2011	2012	2013
PH	6.5-9.5	8.03	8.03	8.20
Ammonia	300 mg/ L	5.15	14.28	9.57
Oil	50 mg/ L	8.50	7.00	5.00
Zn	15 mg/ L	0.08	0.08	0.05
Cu	7.5 mg/ L	0.07	0.05	0.05
Fe	150 mg/ L	0.52	0.50	0.50
Solids in suspension	600 mg/ L	16.50	7.01	9.00

As it can be seen, none of the parameters analysed exceeds the limits set.

8.8.3 Other environmetal performance indicators

The integrated environmental authorization states a periodicity of three years for the noise levels measurements. In 2012, noise levels measurements were

made in 6 different points all over the company. The results obtained were as follows:

Noise levels measurements 2012	
Limits set in integrated environmental authorization db(A)	65.0
Point 1	51.2
Point 2	64.4
Point 3	55.9
Point 4	55.9
Point 5	63.0
Point 6	59.7

As it can be seen, none of the points analysed exceeds the limits set.

9. Environmental targets 2014

To meet the company's commitment to continuous improvement in its environmental performance, as per its environment policy and in line with the environmental aspects identified as significant, the following environmental targets have been set for 2013:

- To achieve a 2 % decrease in GHG emissions associated to the secondary aluminium production.
- To achieve a 2 % decrease in total natural gas consumption associated with the company's production processes.
- To achieve a 1 % drop in the amount of salt slag produced in the course of the company's production processes.
- To achieve a 2 % drop in electricity consumption associated with the company's production processes.
- To achieve a 2 % drop in the amount of flux used in the company's production processes.
- To achieve a 2 % drop in the amount of oxygen used in the company's production processes.
- To achieve a 2 % drop in the amount of gas-oil used in the company's production processes.
- To achieve a 2 % drop in total smokestack emissions into the atmosphere, and ensure that legal limits are met.

- To achieve a 2 % drop in the pollutant load of the waste water discharged, and ensure that legal limits are met.

- To cut the amount of filter dust produced by 1 %.

10. Applicable environmental legislation

Befesa Aluminio, S.L. is a member of various sectorial associations that monitor, identify, provide and update applicable legal texts on a monthly basis. This is done to learn about any new requirements or changes, so that the company's in-house database of legislation can be updated with the latest applicable requirements. Befesa Aluminio, S.L. verifies continuously its compliance with all the legal requirements and certifies the lack of non-fulfilments related to environment or Industrial security.

A list of some of the main environmental legislation applicable to the company follows:

- Integrated environmental authorization

  - Resolution of April 30, 2008 granting an integrated environmental authorization to Befesa Aluminio, S.L.

  - Resolution of June 3, 2010 by the Basque Government Environment Office amending and implementing the integrated environmental authorization granted to Befesa Aluminio, S.L. This resolution was passed following an inspection by the said Office.

  - Resolution of July 19, 2011 by the Basque Government Environment Office modifying the integrated environmental authorization granted to Befesa Aluminio, S.L., incorporating the new liquid aluminium line, and the substitution of the fixed rotary furnace for the new tilting rotary furnace. Both non substantial changes.

  - Resolution of November 14th, 2013 by the Basque Government Environment Office modifying the integrated environmental

authorization as a consequence of the inclusion of new LER codes, new noise limits and increase of the production capacity of the company.

- At the beginning of 2014 a new process has been opened applying for a substantial change of the integrated environmental authorization as a consequence of a new increase in the production capacity of the plant.

- Latest modification (in 2010) of the permit from Consorcio de Aguas de Bilbao-Bizkaia to discharge water into the main sewer.

- Legislation applicable to industrial security.

- Legionella control associated to cooling systems for the production of solid aluminium alloys.

11. Cooperation with environmental organizations

Befesa Aluminio, S.L. is an active member of the following environment-related associations:

- ACLIMA (Basque Environment Industry Cluster Association). The company has signed up to the Commitment to Sustainable Development (1999) and the Declaration of Bizkaia on the Right to the Environment (1999).

- ASERAL (Spanish Aluminium Recovery Association).

- Confemetal (Spanish Confederation of Metal Industry Organisations). The company is an active member of the Environment Committee of this organisation.

- OEA (Organisation of the European Aluminium Recycling Industry).

- ASEGRE (Spanish Association of Special Waste Managers): This association brings together hazardous waste managers based in Spain.

- Technical Committee of AENOR.

Befesa Aluminio, S.L. regularly participates in R&D programmes with various research centres and other European firms, mainly for the improvement of recycling, valorisation and the best possible use of aluminium industry waste.

12. Participation

Befesa Aluminio, S.L. pushes the participation of all their employees in the definition of all the environmental processes. For that purpose facilitates different ways for

problems and improvements communications, using at the same time the company´s committee to guarantee the communication between all the integrated parts of the company.

13. Availability

This environmental declaration is accessible via the corporate website (www.befesa.es).

14. Next environmental declaration

This environmental declaration is intended to provide information on our management policies to associates, authorities, customers, suppliers, the media and local residents, and to establish a constructive dialogue.

It is a public document validated by Bureau Veritas Certification, S.A. (ENAC-accredited environmental certification body nº E-V-0003), with registered address at calle Valportillo primera 22-24, edificio caoba, 28108 Alcobendas, Madrid.

This environmental declaration is valid for 12 months. The next validated declaration is to be submitted in June 2015.

For more details about Befesa Aluminio, S.L. Erandio plant and its products visit our website at www.befesa.es. If you wish to know more about us at any time, do not hesitate to contact Oskar de Diego Rodríguez on:

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Glossary:

kg: kilogram.

Si: silicon.

Cu: cooper.

Mg: magnesium.

mm: millimeters.

t: ton.

t CO_2 eq: CO_2 equivalent tons.

MWh: megawatt per hour.

m^3: cubic meter.

HCl: hydrochloric acid.

HF: hydrofluoric acid.

NO_x: nitrogen oxides.

SO_2: sulphur dioxide.

SST: solids in suspension.

NH_3: ammonia.

Zn: zinc.

Fe: iron.

g: gram.

NaCl: sodium chloride.

KCl: potassium chloride.

cm^2: square centimeter.

h: hour.

kW: kilowatt.

V: volt.

R&D: research and development.

m^2: square meter.

GHG: greenhouse gases.

mg/ Nm^3: miligram per normal cubic meter.

Pb: lead.

Cr: chromium.

Mn: manganese.

Ni: nickel.

As: arsenic.

Cd: cadmium.

Hg: mercury.