

Befesa Aluminio, S.L.

Les Franqueses del Vallés plant

Befesa Aluminio, S.L.

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This document contains the environmental declaration of Befesa Aluminio, S.L. – Les Franqueses del Vallés plant for 2013. 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).

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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. 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, health & safety & environmental 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

Erando 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.- Les Franqueses del Vallés plant

Befesa Aluminio S.L., is located in Les Franqueses del Valles (Barcelona) since 1985 and makes the following end products:

- * 7-10 kg ingots of aluminium and aluminium alloys for moulding.

Following, a layout of the facilities at the Les Franqueses del Vallés plant is shown:

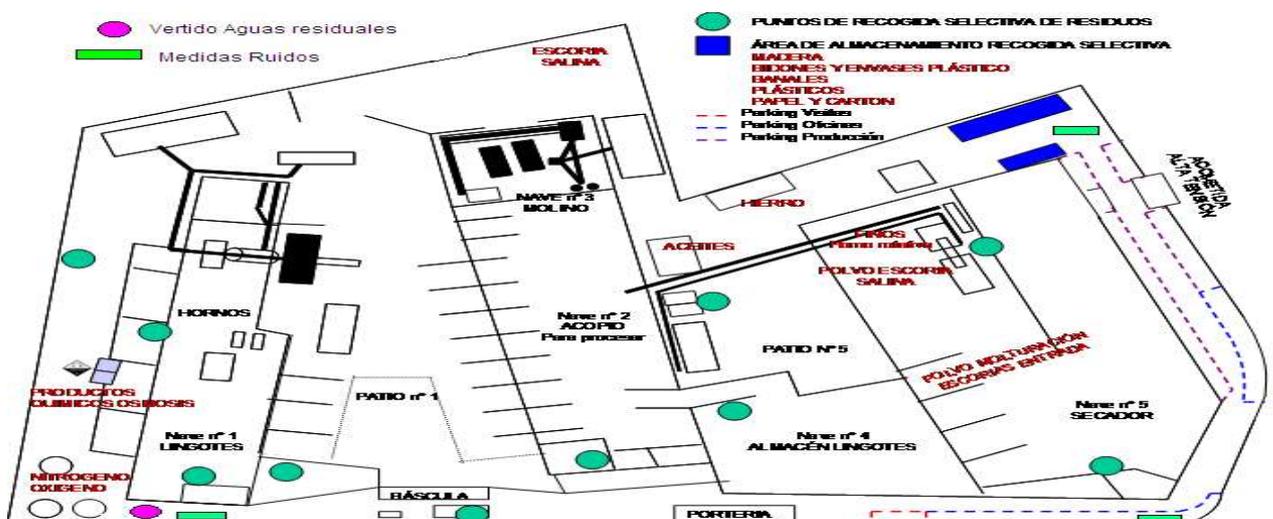


Illustration 1: Layout of the facilities at the Les Franqueses del Vallés plant.

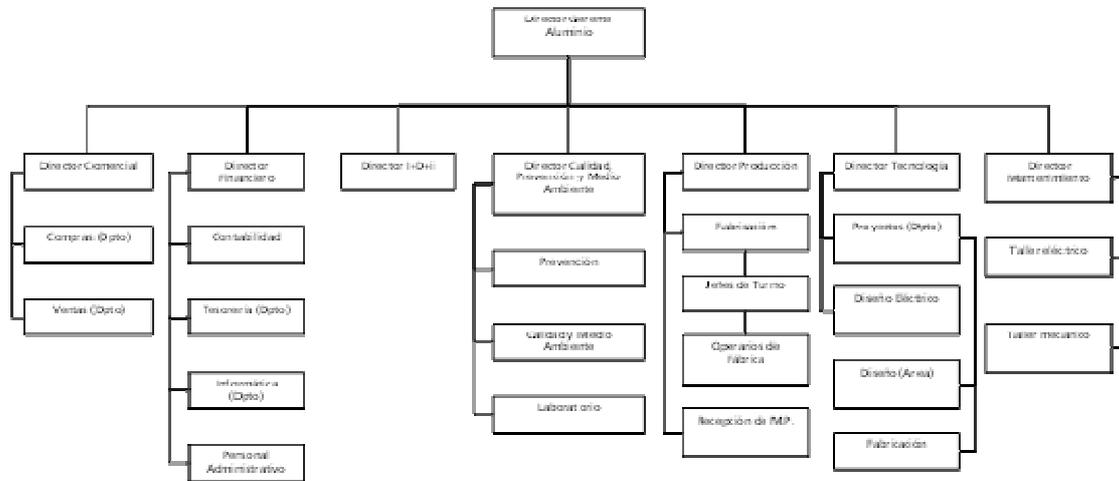


Illustration 2: Organization chart of Les Franqueses del Vallés plant.

The recycling and recovery operations at the Les Franqueses del Vallés 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, and in the case of shavings, treated through the two shavings dryers, are smelted to the degree required to obtaining the approximate specification indicated by the end customer, using rotary furnaces designed in-house 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 calcium hydroxide.

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 the cement industry, thus completing the cycle of aluminium waste recovery.

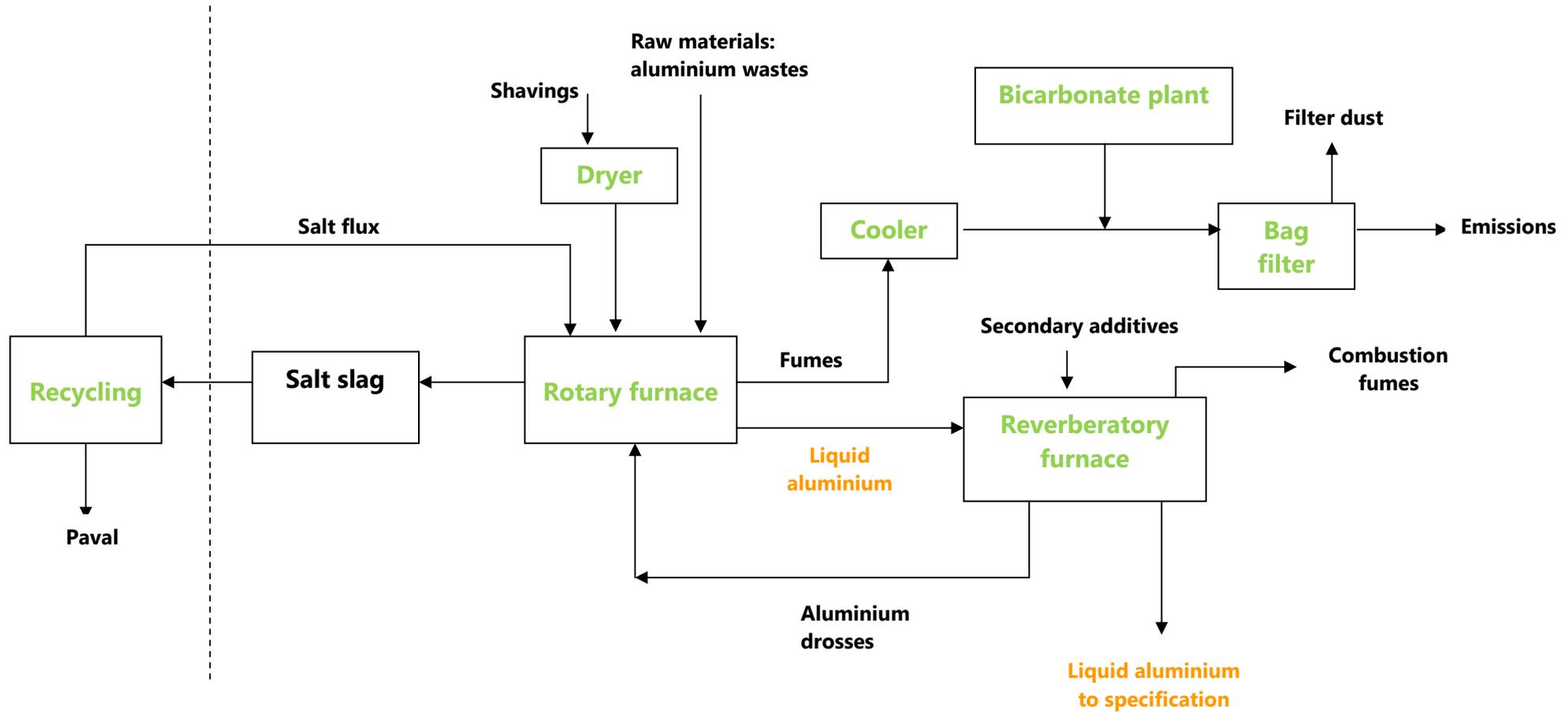


Illustration 3: Flow diagram of the process for obtaining aluminium in liquid form.

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. The molten metal is sent to the pouring wheel for pouring into ingots. The pouring wheel comprises 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 three cooling systems fitted with parallel filters. 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.

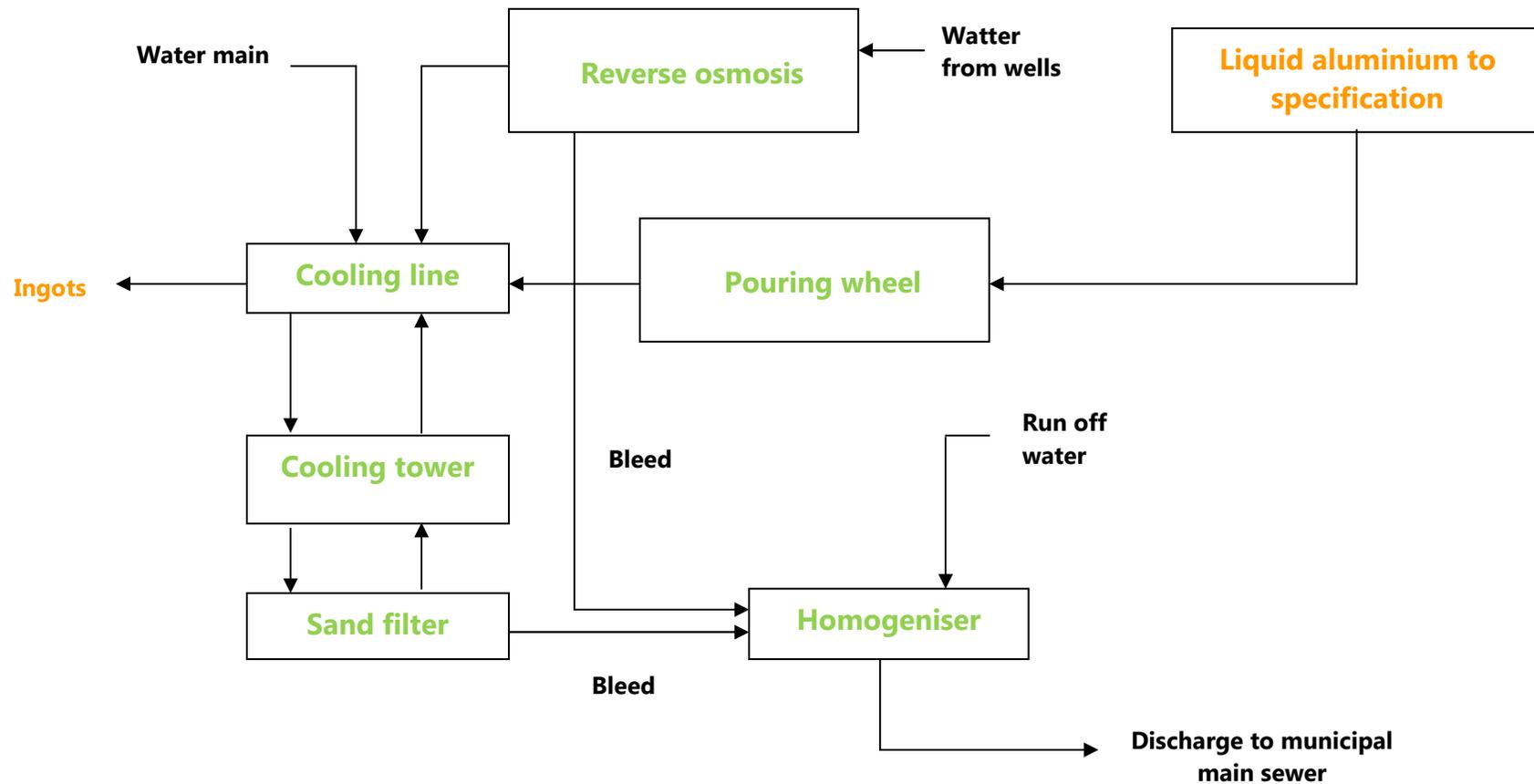


Illustration 4: Flow diagram of the ingot and liquid aluminium manufacturing process.

The average annual output at the Les Franqueses del Vallés plant from 2011 to 2013 was 43,986 t of finished product (see page 28), 20 % of it destined for national foundries and 80 % 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.

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 2003 to implement an ISO 14001 compliant environmental management system (EMS). In 2005 this system was verified as per EMAS with registration number ES-CAT-00203.

5. Representative environmental aspects of the company

The following environmental aspects are classified as representative:

A) Emissions into the atmosphere

There are currently nine hotspots at the plant, in the facilities where the production process takes place: the combustion fumes from shavings dryer nº 1, the combustion fumes from rotary furnace nº 1, fumes from the tilting furnace nº 2, fumes from rotary furnaces loading pit areas, fumes from shaving dryer, fumes from tilting furnace nº 3, fumes from laboratory furnaces, fumes from rotary furnace nº 2 and fumes from shavings dryer nº 2.

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 (BA20120011) which includes the former hazardous and inert waste producer permit (P-03570.1).

- **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 dust: As a consequence of loads and movements of raw materials inside furnaces and shaving dryers.
- Filter bags: These are part of the combustion gas treatment system. Damaged and spent bags are replaced and sent to an authorised waste manager.
- 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.
- 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.

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. These types of waste are selectively stored and sent to an authorised waste manager.
- General wastes no selectively collected: these go to landfill.

C) Depletion of natural resources

The company's integrated management system includes a method for identifying, monitoring and controlling the resources used, so as to help manage natural resource consumption at the plant. These resources correspond to the consumption of natural gas, used in the operation of ovens and dryers, electric energy consumption, water consumption for sanitary and cooling of ingots, to diesel (mobile machinery and dryers chip), oxygen (ovens) and nitrogen (used in reverberatory furnaces for homogenization and degassing of the liquid metal).

6. Significant environmental aspects of Les Franqueses del Vallés 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:

- Confined emissions of CO, NO_x, COT, Particules, HCl and PCCd/F, as a consequence of usual combustion processes in rotary, reverberatory and laboratory furnaces and dryers.
- Filter bags generation as a consequence of their use inside filters.
- Nitrogen consumption as a consequence of degassing operations inside furnaces.
- Gasoil consumption used for mobile equipments and dryers.
- 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:

Aspect	Target	Target value	Result
CO₂ emissions	To reduce 2 % for GHG emissions.	-2 %	-0,034
CO, NO_x, PST y CO emissions	To reduce 2 % for CO, NO _x , PST y CO emissions.	-2 %	-38,27 %
Natural gas consumption	To reduce 2 % consumption associated to production processes	-2 %	-1,69 %
Natural gas consumption	To reduce 2 % consumption associated to shavings dryers	-2 %	+0,88 %
Electricity consumption	To reduce 2 % consumption associated to production processes	-2 %	-8,36 %
Slat flux consumption	To reduce 1 % consumption associated to production processes	-1 %	+1,31 %
Oxygen consumption	To reduce 1 % consumption associated to production processes	-1 %	+2,76 %
Nitrogen consumption	To reduce 1 % consumption associated to production processes	-1 %	+15 %
Gasoil consumption	To reduce 2 % consumption associated to production processes	-2 %	+2,97 %
Water consumption	To reduce 2 % consumption associated to production processes	-1 %	-18,91 %
Salt salg generation	To reduce 1 % generation associated to production processes	-1 %	+5,08 %
Filter dust generation	To reduce 1 % generation	-1 %	-3,02 %
Mud generation	To reduce 2 % generation	-2 %	-71,08 %

- **To reduce 2 % for GHG emissions associated to secondary aluminium production.**

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 t eq CO₂/ t in 2013 vs 0.2966 t eq CO₂/ t in 2012).

- **To reduce 2 % for CO, NO_x, PST y CO emission.**

The initial goal of reducing total emissions has been earned confined. In 2012 the result was 6.14 kg NO_x + CO + COT + PST / t product manufactured, while in 2013 was 3.79 kg NO_x + CO + COT + PST / t. This reduction is exactly of 38.27 %. It has also been completed in order to comply with the legal limits. The reason for this improvement in emissions is directly related to the quality of the materials used in the activity, which have been cleaner materials during all year 2013. The increase in relative production has already had its influence in this final improvement.

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

The relative consumption of natural gas has declined substantially in 2013 (1.166 MWh / t product manufactured), with respect to the values obtained in 2012 (1.186 MWh / t product manufactured). Although this reduction of 1.69 %, does not achieved the objective for 2013, the natural gas consumption has obviously

decreased and the evolution of consumption in the last years can be considered positive.

- **To achieve a 2 % drop in natural gas consumption associated to shavings dryers.**

The natural gas consumption associated to shavings dryers in 2013 has been of 0.399 MWh/ t treated which, compared with 0.396 MWh/ t treated in 2012, represents an increase of 0.88%. Objective defined for the year has been definitely not achieved.

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

The relative consumption power in 2013 has decreased very significantly with respect to the values reported in 2012, mainly due to operational improvement actions that have been carried out in all the facilities. The specific consumption of 2013 reaches values of 0.0976 MWh / t, which is an improvement of 8.36 % compared to consumption in 2011 (0.1065 MWh / t).

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

The goal of reducing salt slag generation has not been achieved, mainly due to the nature of the raw materials used in the production of final product and the quality of the salt flux used in production processes. The relative value in 2013 was 0.62 t / t

product made against the value of 0.59 t / t product manufactured in 2012, representing an increase of 5.08 %.

- **To achieve a 1 % drop in the amount of flux used in the plant's production processes.**

The relative consumption of salt flux has increased in the year 2013 (0.310 t / t) a total of 1.31 % compared to the values of 2012 (0.306 t / t). The objective has therefore not been achieved, mainly due to the reasons stated in the objective associated with the generation of salt slag. That is, type of materials used and quality of the salt flux.

- **To achieve a 1 % drop in the amount of oxygen used in the plant's production processes.**

The relative oxygen consumption increases 0.145 t / t product made in 2012, to 0.149 t / t product manufactured in 2013, representing an increase of 2.76 %. The objective has not been achieved mainly because of scrap market circumstances, which make always difficult to maintain the same mix of materials used in the final production. Mix used in 2013 has been completely different to that of 2012, with lower metal yield materials used.

- **To achieve a 1 % drop in the amount of nitrogen used in the plant's production processes.**

Relative nitrogen consumption in 2013 was 0.023 t / t compared to 0.020 product

manufactured t / t product manufactured in 2012. That means that relative consumption increases over the previous year by 15 %, not achieving the yearly reduction target. This fact can be attributed to the huge number of additives compounds needed to produce final alloys demanded in the market.

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

The proposed objective of reducing gasoil consumption directly associated with moving machinery and the product produced has not been achieved, increasing consumption by 2.97 %. The relative value of 2013 has increased compared to the year 2012, 0.104 GJ / t product made in 2013, by 0.101 GJ / t product made in the previous year.

- **To achieve a 1 % drop in the amount of water used in the plant's production processes.**

The relative water consumption throughout the year 2013 amounts to 0.7879 m³ / t product manufactured, representing a total decrease of 18.91 % compared to the values of 2012 (0.9716 m³ / t product manufactured). Therefore, the objective has been achieved and can be considered as a significant improvement. During this year the production of heaviest ingots and biggest packaging has been hardly pushed, reducing the casting time and then the water consumption.

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

The relative amount of filter dust generated during the year 2013 has reached values of 0.01444 t / t product produced, representing a reduction of 3.02 % compared to the values of 2012 (0.01489 t / t product manufactured). This is thanks mainly to the use of low dust raw materials.

- **To achieve a 2 % drop in muds coming from de purify systems**

The value for 2013 has been 0.107 kg / t and 2012 of 0.370 kg / t, so that the target has been comfortably met with a decrease of 71.08 %.

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, and 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 processed waste	Total aluminium produced
2011	47,806	36,053
2012	50,192	42,948
2013	63,222	52,958

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 2012 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 and in shavings dryers. It is supplied directly from main.

Natural gas	2011	2012	2013
Consumption (MWh)	62,921.0	66,207.1	74,376,6
Production (t)	36,053	42,948	52,958
Relative consumption (MWh/ t)	1.75	1.54	1.40

The relative consumption of natural gas has decreased substantially in 2013 (1.40 MWh / t product manufactured), with respect to the values reached in 2012 (1.54 MWh / t product manufactured). These values refer to the consumption of the total natural gas plant. This reduction of consumption is due primarily to the nature of the materials used which allows decreasing fusion times in rotary furnaces.

During 2013 has already made a separate tracking of natural gas consumed in the production processes (obtaining a value of 1.166 MWh / t product manufactured) and in shavings treatment processes, (the value obtained in 2013 395.50 kWh / t treated shavings). Separate objectives of both indicators will be monitored.

- **Electricity**

The company has two transformers located in buildings nº 5 and nº 1. These two transformers have an electrical power of 630 and 1,000 kW.

In relation to lighting, fluorescent are used in office, while in production and outside areas, mercury lamps are used. Maintenance is progressively changing these mercury lamps for metallic halide lamps.

Electricity	2011	2012	2013
Consumption (MWh)	4,565.1	4,574.1	5,132.2
Production (t)	36,053	42,948	52,958
Relative consumption (MWh/ t)	0.127	0.106	0.097

Electricity consumption per ton of product produced has declined substantially in 2013, mainly due to good management in production processes and drying of shavings. For next years, the indicator will be assessed taking into account separately, consumption directly related to the production and consumption related to the treatment of shavings.

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 cement industry.

Salt flux	2011	2012	2013
Consumption (t)	13,417	12,791	16,213
Production (t)	36,053	42,948	52,958
Relative consumption (t/ t)	0.37	0.30	0.31

The relative consumption of salt flux has lightly increased in 2013, with respect to the values reported in 2012, mainly due to the nature of the raw materials used to produce the final product and to the decrease of the quality of salt flux used in production processes, with higher humidity and lower KCl content.

- **Oxygen and Nitrogen**

There are two oxygen storage tanks and one nitrogen storage tank at the plant, which are owned by the supplier. Oxygen is used as part of the fuel for the smelting process in the rotary furnaces. Nitrogen is used for degasification in reverberatory furnaces.

Oxygen	2011	2012	2013
Consumption (t)	5,637	6,232	7,908
Production (t)	36,053	42,948	52,958
Relative consumption (t/ t)	0.156	0.145	0.149

The specific Oxygen consumption increased with respect to the data reported in 2012. It has not remained the same mix of materials in the previous and this has caused a change in the melting process, the most significant has been a lower metal yield of the materials from the previous year.

Nitrogen	2011	2012	2013
Consumption (t)	655	844	1,236
Production (t)	36,053	42,948	25,958
Relative consumption (t/ t)	0.018	0.020	0.023

The specific consumption of Nitrogen has increased compared to 2012. The actions undertaken for improvement of the mergers made in 2013 have not been effective, probably due to the large amount of addition elements consumed during the year, increasing the homogenizing times of aluminium inside furnaces.

- **Gasoil**

Gasoil is used in small quantities in Befesa Aluminio, S.L. to wet shavings received before drying operations, and as fuel for mobile machinery. Gasoil consumption changes depending on the percentage of humidity of the raw material before drying.

Gasoil	2011	2012	2013
Consumption (GJ)	6,982	4,338	5,505
Production (t)	36,053	42,948	52,958
Relative consumption (GJ/ t)	0.194	0.101	0.104

As may be observed from the table, the specific consumption of diesel has lightly increased in 2013 compared to 2012. The data reported is only for the gasoil consumption associated to the production processes (consumption associated to mobile machinery) without taking into account gasoil used for the shaving dryers.

8.4 Water consumption

At Les Franqueses del Vallés plant, water is taken from municipal main network and from three legalized wells. The main uses of water are as follows:

- Cooling water: Evaporated water in the cooling systems, auto-cleaning operations of sand filters used to regulate the quality of the water, reverse osmosis to reduce the conductivity of fresh water and water for industrial boilers.
- Manufacturing process: Fresh water previous to shaving drying operations.
- Domestic water: Toilets and changing rooms.
- General cleaning: Cleaning under pressure.
- Irrigation and fire-fighting systems.

Water coming from wells is used mainly for cooling the molten metal on pouring in the aluminium ingot manufacturing line. It is recycled through an enclosed circuit where it is cooled in three 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.

Water coming from municipal main network includes the water consumed at offices, the workshop, laboratory and the changing rooms.

The company has a general water meter, meters for each well 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 (m³)	36,346	41,729	41,722
Production (t)	36,053	42,948	52,958
Relative consumption (m³/ t)	1.01	0.97	0.79

The relative water consumption during 2013 was significantly lower than the previous year. During this year has increased the production of heaviest ingots and packaging and cooling of the ingots has been optimized, reducing water consumption.

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)	24,199	25,205	32,605
Ratio of salt slag to end product (t/ t)	0.67	0.59	0.62
Filter dust produced (t)	535	623	760
Ratio of filter dust to end product (t/ t)	0.015	0.015	0.014
Aluminium dross produced (t) (*)	1,490	1,720	2,120
Ratio of aluminium dross to end product (t/ t) (*)	0.041	0.040	0.040

(*) estimated figure.

Have reduced specific amounts filter dust generated mainly due to the nature of the raw materials used in the final product. Being low dust and clean materials, this has facilitated the maintenance indicators associated. As for the salt cake, we can say that there is a light increase compared to previous years values, due to the bigger consumption of aluminium drosses in the production processes.

8.6 Impact on the biodiversity

The total surface area of the plant is 20,275 m². It has no impact on biodiversity, since the site is not part of a protected area or closed enough to such an area to have any environmental effect on it. 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)	0.56	0.47	0.38

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 (Erandio, Les Franqueses del Vallés and Valladolid). This inventory calculates both direct and indirect emissions using a method based on ISO standard 14064. An independent verification report is available for this 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 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	2011	2012	2013
NO_x emissions (t)	20.64	28.02	41.46
NO_x relative emissions (kg/ t)	0.57	0.65	0.78
Solid particles emissions (t)	7.20	7.76	9.16
Solid particles relative emissions (kg/ t)	0.20	0.18	0.17

8.8 Fulfillment of environmental provisions of law

8.8.1 Emission hotspots

The tables below show the last measurements taken at all the hotspots present at the plant for the parameters subject to limits as per the integrated environmental authorization, and a comparison with the maximum permitted levels. The integrated environmental authorization gives a periodicity of 2 years, corresponding the last ones to 2012.

- **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 calcium hydroxide.

Hotspot identification	Number of registration	Limits as per integrated environmental authorization 2012	Values for the last measurements 2012
Rotary nº 1	11,027	Solid particles: 50mg/Nm ³	5.91
		NO _x : 450 mg/Nm ³	41.91
		COT: 50 mg/Nm ³	8.44
		*HCl: 30 mg/Nm ³	0.63
		*Dioxines and Furanes: 0.5 ng/ EQT-I/Nm ³	3.30
		*Dioxines and Furanes: 0.5 ng/ EQT-I/Nm ³	0.15**
Rotary nº 2	18,497	Solid particles: 50	0.29
		NO _x : 450	44.59
		COT: 50	12.72
		*HCl: 30 mg/Nm ³	0.53
		*Dioxines and Furanes: 0.5 ng/ EQT-I/Nm ³	0.037

* Reference limit value

** 2014 values after corrective actions

- Combustion fumes from tilting rotary furnaces**

Tilting rotary furnaces also use a blend of natural gas and oxygen as fuel. The combustion fumes produced in the combustion chambers of tilting rotary furnaces are exhausted directly to the atmosphere, because only clean raw

materials with high metal content are smelted in them. This makes completely unnecessary to cool the fumes and to retain solid particles through filter bags.

Hotspot identification	Number of registration	Limits as per integrated environmental authorization 2012 (mg/ Nm ³)	Values for the last measurements 2012
Tilting rotary nº 2	4,509	Solid particles: 50	13.45
		CO: 100	30.12
		NO _x : 450	41
Tilting rotary nº 3	17,253	Solid particles: 50	4.13
		CO: 100	12.50
		NO _x : 450	41

- **Rotary furnace loading pit area and dryers**

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

Hotspot identification	Number of registration	Limits as per integrated environmental authorization 2012 (mg/ Nm ³)	Values for the last measurements 2012
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Rotary furnace loading pit area	11,019	Solid particles: 50	8.69
Dryer hotspot	17,275	Solid particles: 50	0.64

- **Laboratory furnaces**

The laboratory facility has three 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.

Hotspot identification	Number of registration	Limits as per integrated environmental authorization 2012 (mg/ Nm³)	Values for the last measurements 2012
Laboratory furnaces	17,274	Solid particles: 50	7.42
		CO: 100	12.50
		NO _x : 450	41

- **Shavings dryers**

The shaving drying system is compound by two dryers (n° 1 and n° 2). Dryers use a blend of natural gas and oxygen to dry 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 drying 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.

Hotspot identification	Number of registration	Limits as per integrated environmental authorization 2012 (mg/ Nm ³)	Values for the last measurements 2012
Dryer n° 1	5,374	Solid particles: 50	4.4
		NO _x : 450	41
		COT: 50	15.68
Dryer n° 2	29,351	Solid particles: 50	1.78
		NO _x : 450	42.39
		COT: 100	4.03

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 filter) and run-off water collected in the plant.

- Domestic water

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

The company now has a single discharge point for industrial and domestic water, which flows directly into the municipal sewer.

Befesa Aluminio, S.L. has an authorization to discharge, granted by the Consorcio del rio Besos on 30th of October 2006 and validated on 15th of September 2007. This authorization has to be renewed every year (next 30th August 2013). In this authorization some limits are defined:

- Conductivity < 8,000 uS/ cm
- Soluble salts < 9,500 uS/ cm
- Chlorides < 2,500 mg/ L

A continuous measurement of the conductivity is made in order to check the characteristics of water discharge in the waters coming from cleaning operations of sand filters. Besides, water is analysed every three months, to control the presence of legionnaire.

In case of not to have the analysis of the Consorcio, the company makes a complete analysis every year to control all the parameters established by the Consorcio.

Next, values for the three last analysis of water discharge are shown:

Parámetros	Limits	Average values of discharge		
		2011	2012	2013
Conductivity at 20°C	8,000 uS/ cm	6,830	3,120	2,520
Chlorides	2,500 mg/ L Cl	1,840	-	-
Solid particles	750 mg/ L	206	72	37
No decanted DQO	1,500 mg/ L O ₂	74	101	102
Decanted DQO	1,500 mg/ L O ₂	57	75	82
Inhibiting materials	50 Equitox/ m ³	<1.1	<1.1	<1.1
Total phosphorus	50 mg/ L P	0,5	1,6	1.5
Ammonia	-	4.3	18.1	21.7
Aluminium	20 mg/ L	-	-	-

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

8.8.3 Other environmental performance indicators

The factory makes a periodic control of its external noise as a consequence of its activity. It has to be mentioned that the factory is located in an industrial area (with other manufacturing companies and storages closed) and as a result

of the proximity of traffic in the area, the noise associated to the activity goes unnoticed. Besides, the activity of the company is quite far away from the closer village of Les Franqueses del Vallés.

The current legislation related to external noise is order 176/2009 annex A. The company has made different changes in its activity after measurement in 2007, with the stop of its aluminium drosses mill and the decrease of some other heavy machinery. Because of that reason, new measurements have been made to check out again the real noise emissions. These measurements have been made in May 2011 and limits have not been exceeded.

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 2014:

- To achieve a 2 % decrease in GHG emissions associated to the secondary aluminium production.
- To achieve a 2 % drop in total smokestack emissions into the atmosphere, and ensure that legal limits are met.
- To achieve a 2 % decrease in HCl and dioxins and furanes emissions associated to the secondary aluminium production.
- To achieve a 2 % decrease in total natural gas consumption associated with the plant's production processes.
- To achieve a 2 % decrease in total natural gas consumption associated with the plant's chip treatment processes.
- To achieve a 2 % drop in electricity consumption associated with the plant's production processes.
- To achieve a 2 % drop in the amount of gas-oil used in the plant's production processes.

- To achieve a 2 % drop in the amount of water used in the plant's production processes.
- To achieve a 2 % drop in the amount of nitrogen used in the plant's production processes.
- To achieve a 2 % drop in the amount of calcium hydroxide used in the plant's production processes.
- To achieve a 2 % drop in the amount of oxygen used in the plant's production processes.
- To achieve a 2 % drop in the amount of flux used in the plant's production processes.
- To achieve a 1 % drop in the amount of salt slag produced in the course of the plant's production processes.
- To cut the amount of filter dust produced by 1 %.
- To achieve a 2% drop of filter bags generation.

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.

Nevertheless, in relation to RD 1027/2007 (RITE) an unfulfilment has been found in the external validation process 2013, as a consequence of lack of evidences of periodically maintenance associated to air and heating equipments. This has been already solved with the emission by an external maintainer of the needed evidences.

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

- Integrated environmental authorization BA2030044 awarded on 1st December 2004 by the Catalan Government Environment Office for the activity of non-ferric metals recovery with capacity > 20 t/day of aluminium. The authorization BA2060085 awarded on 22th September 2008, including a non-substantial change and the punctual modification of the annex of integrated environment authorization BA2030044 awarded on 29th April 2008.
- Renewal of the integrated environmental authorization BA20120011 awarded on 11st December 2012.
- Legislation of water discharge (Articles 24, 26, 29, 38 and 49) to award discharge authorization.

- RD 782/1998 (art. 15) of 30th April that approves the regulation for the development and execution of law 11/1997 of 24th April for containers and containers wastes.
- Law 22/2011 of wastes and contaminated floors, in relation to producers and recovery factories of wastes.
- Industrial Safety Legislation (fighting systems, oil installations, high voltage, pressure vessels, etc.).
- European agreement for the international transport of dangerous material by road (ADR).

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 Manel Arco Alcaraz on:

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Glossary:

kg: kilogram.

Si: silicon.

Cu: cooper.

Mg: magnesium.

mm: millimeters.

t: ton.

t CO₂ eq: CO₂ equivalent tons.

MWh: megawatt per hour.

m³: cubic meter.

HCl: hydrochloric acid.

HF: hydrofluoric acid.

NO_x: nitrogen oxides.

SO₂: sulphur dioxide.

SST: solids in suspension.

NH₃: ammonia.

Zn: zinc.

Fe: iron.

g: gram.

NaCl: sodium chloride.

KCl: potassium chloride.

cm²: square centimeter.

h: hour.

kW: kilowatt.

V: volt.

R&D: research and development.

m²: square meter.

GHG: greenhouse gases.

mg/ Nm³: milligram per normal cubic meter.

Pb: lead.

Cr: chromium.

Mn: manganese.

Ni: nickel.

As: arsenic.

Cd: cadmium.

Hg: mercury.