

**Befesa Aluminio, S.L.**

**Erandio plant**

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This document constitutes the environmental declaration of Befesa Aluminio, S.L.- Erandio plant corresponding to the year 2019. It has been made considering the requirements established by the regulations (CE) N° 1221/2009, (CE) N° 1505/2017 and (CE) N° 2026/2018 of the European Commission, concerning the voluntary participation of organizations in a community environmental management and audit system (EMAS).

**Contents****1. EMAS registration**

- 1.1 Regulation (EC) nº 1221/2009, nº 1505/2017 and nº 2026/2018
- 1.2 Environmental declaration
- 1.3 Befesa Aluminio, S.L. as a member of the system

**2. The company's activities, products and services****3. Environmental management system****4. Befesa Aluminio, S.L. – Erandio plant****5. Representative environmental aspects of Erandio's plant****6. Significant environmental aspects of Erandio's plant****7. Outline of environmental targets & goals 2019****8. Environmental performance of the company**

- 8.1 Aluminium waste recycling for aluminium recovery
- 8.2 Energy consumption
- 8.3 Secondary materials consumption
- 8.4 Water consumption
- 8.5 Waste management
- 8.6 Impact on biodiversity
- 8.7 Emission of pollutants into the atmosphere
  - 8.7.1 Greenhouse gases (GHGs)
  - 8.7.2 Emission of other pollutants into the atmosphere
- 8.8 Environmental performance regarding legal provisions
  - 8.8.1 Emission-Smokestacks
  - 8.8.2 Emissions discharged into the sewer
  - 8.8.3 Other environmental performance indicators

**9. Environmental targets 2020****10. Applicable environmental legislation****11. Cooperation with environmental organizations****12. Participation****13. Availability****14. Next environmental declaration**

## 1. EMAS registration

### 1.1 Regulation (EC) nº 1221/2009, nº 1505/2017 and nº 2026/2018

Regulation no. 1221/2009 on the EMAS (Eco-Management and Audit Scheme) is a system by which organizations can voluntarily adhere to a community management system and environmental audits. In 2017, Regulation no. 1505/2017 is published and enters into force, which partially modifies (Annex I, II and III) the aforementioned Regulation and in 2018 the Regulation nº 2026/2018 that modifies Annex IV in which the main points to be included in the EMAS environmental declaration are defined.

These regulations have three fundamental commitments:

- Internal control of the environmental impacts of the process and registration under the basic assumption of compliance with the environmental legislation applicable.
- Continuous reduction in impacts, defining and publishing the objectives and actions to achieve them, as well as the control and results through continuous environmental audits.
- Commitment to full transparency regarding society and other sectors.

### 1.2 Environmental declaration

It is the essential element of the system, since it involves making the company's environmental data available to society:

- Consumption of raw materials, water, electricity, fuel, emissions, effluents, waste, etc.
- The company's environmental policy, ensuring compliance with the applicable regulations and, at the same time, the commitment to continuous improvement based on quantifiable objectives and the prevention of pollution.
- Validation of the system audit, as well as compliance with the regulations, all through an authorized verifier.

In short, to inform society about our activity, provide key data and ensure environmental compliance of our company.

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

Voluntarily Befesa Aluminio, S.L. with NACE code 2453 (light metal casting) has decided to join the system, to make its environmental commitment clear to society in the development of its daily activity. This is defined as:

"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**

The company Befesa Aluminio, SL, has 4 work centers of recognized international prestige, located in the towns of Erandio (Bizkaia), Les Franqueses del Vallés (Barcelona), Bernburg (Germany) and Valladolid, with the first three centers being referenced refineries of aluminum and the fourth a salt slag recovery. All of them are within the sector of the so-called eco-industry, because they are dedicated to recycling, recovering and valorizing of all types of waste from the aluminum industry. The total recycled process allows the recovery of the free metal of all the materials that it processes, as well as the oxide that inevitably accompanies them, providing an important alternative to the aluminum of primary type and the high consumption of energy that demand its obtaining and assuming consequently an inexhaustible source of obtaining metals in front of the mining extraction, consequently prolonging the rate of depletion of the planet's natural resources.

The activities developed by Befesa Aluminio, S.L. constitute an important and fundamental link in the life cycle of aluminium. The activities carried out in primary aluminium production plants, aluminium processing and finishing plants, or aluminium smelters in general, would be totally unfeasible without the presence of industries such as Befesa Aluminio, SL, in charge of the treatment, recovery and recycling of waste that they generate by converting mentioned waste into assimilable raw materials. Befesa Aluminio, S.L., since its beginnings, has focused its activities on the production of aluminium alloys under any type of specification for the injection molding of parts for the automotive, household appliances and construction sectors.

The overall calculation of its activities has placed Befesa Aluminio S.L. as the main company in its activity in Spain and one of the largest in Europe. The link that Befesa Aluminio, S.L. has maintained and maintains with groups and companies of worldwide recognition and the use of the acquired knowledge, has contributed to Befesa Aluminio, S.L. be an aluminium recycling industry with suppliers and customers all over the world such as manufacturers of the automotive sector and foundries supplying these.

### **3. Environmental management system**

Our environmental management system consists of the following elements:

- Environmental policy: formally describes the guidelines and objectives of Befesa Aluminio, S.L. in its relation to the environment.
- Environmental management program, which includes the necessary activities to be carried out to achieve the objectives.
- Documentation of the environmental management system, which mainly consists of:
  - Context of the organization: describes the external and internal issues that are relevant for the company and that affect its ability to achieve the expected results of its environmental management system.
  - Scope of the organization: determines the limits and applicability of the environmental management system.

- Procedures: describe the development of the activities carried out by the company.
- Internal environmental audits, such as management tools to evaluate the development and effectiveness of the implemented environmental management system and identify opportunities for improvement.
- Annual Management review of the system to evaluate the implementation and effectiveness and establish new objectives for continuous improvement.
- Evaluation of direct and indirect environmental aspects throughout the life cycle of the manufactured product.
- Registration of the legislation and identification and evaluation of the applicable legal requirements.

In addition, it has three main objectives:

- The commitment to comply with the legal requirements and others that apply to this facility.
- Carry out our recycling activity in a manner that respects the environment, paying special attention to those activities and products that could entail risks for the environment.
- Continuous improvement from the environmental point of view.



These bases come from the guidelines established by our management policy, which has been revised at the end of 2019 without changes in its content.

### **Quality, safety, environment and energy policy**

#### **Values**

We promote the Quality of our products and processes, the defense of the Environment, the Safety and Health of our direct and indirect workers and the Sustainable Development of our environment.

#### **Policy**

Befesa Aluminio, S.L. aspires to become a world leader in the aluminium sector in the areas of Quality, Prevention, Environment and Energy Efficient Management, convinced that it is the only path towards its productive excellence.

#### **Principles**

The General Manager of the company and all the Processes Responsible must be the first example of compromise, image and zero tolerance and we assume the final responsibility in the Quality, Health, Safety, Environment and Energy Management of the company.

We consider our human resources the main and key factor of our economical business, so we train them and give them action availability in the Quality, Health, Safety, Environment and Energy Management. of the company.

We assume all employees' involvement as the main question for the company's success, pushing the dialog and continuous and active participation.

To keep Health and Safety of our employees and the preservation of our Environment is part of the diary work of each of our employees.

We do never put ahead Production of Economic benefit to Health and Safety.

We assume as objective of the company the principle of "Zero accidents".

We consider that all accidents are avoidable and that all accidents and incidents must be communicated and investigated as a way to the continuous improvement.

We assume the compromise of getting all the necessary human and technical resources to ensure the continuous protection of our Environment and the development of a safety and free accidents place of work.

We ensure the fulfilment of all the applicable legislation as well as all the external and internal stablished standards and requirements,

We develop a Quality, Health, Safety, Environment and Energy integrated management system which is periodically revised and audited according to well-known international standards.

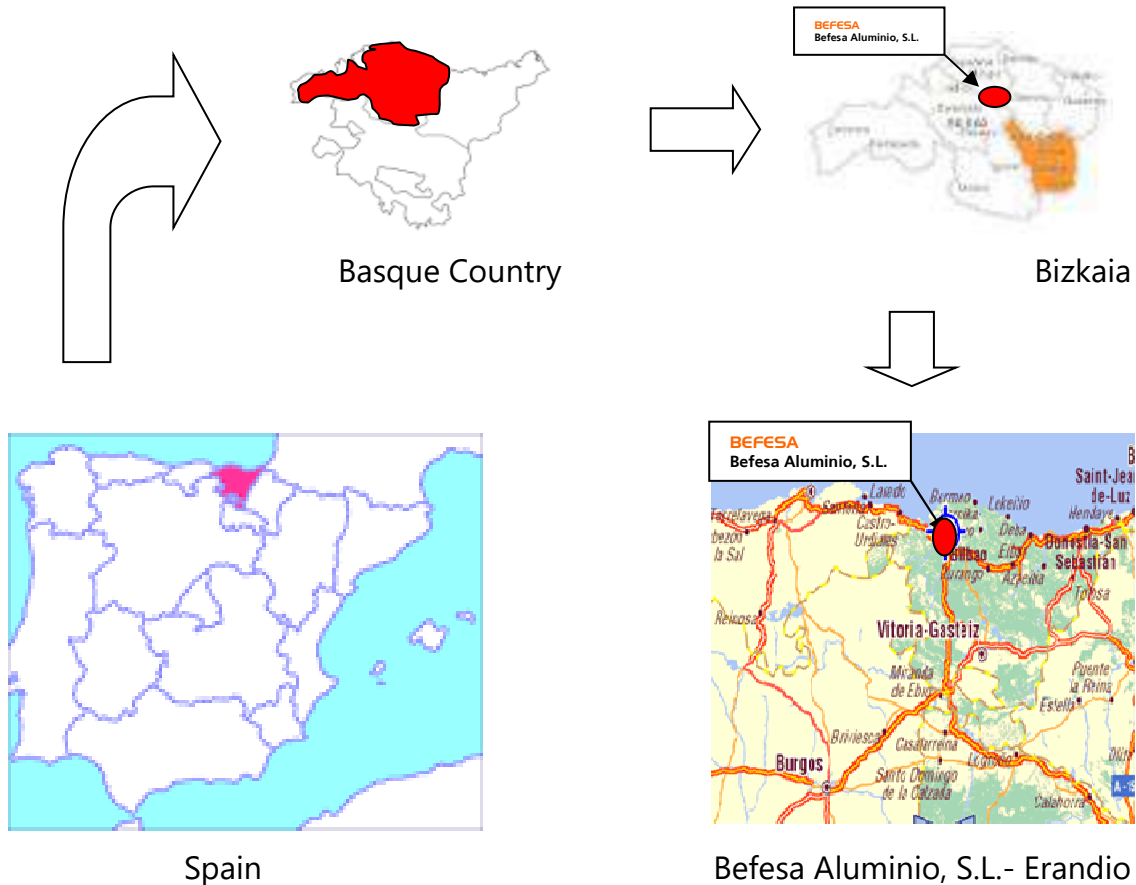
Erandio, November 2016

In accordance with the requirements imposed by the internationally recognized ISO 14001: 2015 standard, the Managing director of Befesa Aluminio, S.L. has appointed the following person to ensure the implementation and maintenance of the established environmental management system:

- **Oskar de Diego Rodríguez, Environmental Manager**, as a delegate of the management to establish, implement and maintain the environmental management system up to date and at the same time guarantee compliance with all applicable environmental requirements.

It must be mentioned the integrated management that is currently being carried out of the quality, prevention, environment and energy systems with the aim of progressing jointly in the four fields, simplifying efforts, but maintaining the rigor and seriousness characteristic of the four individualized concepts that does not compromise the well-being of our future generations.

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

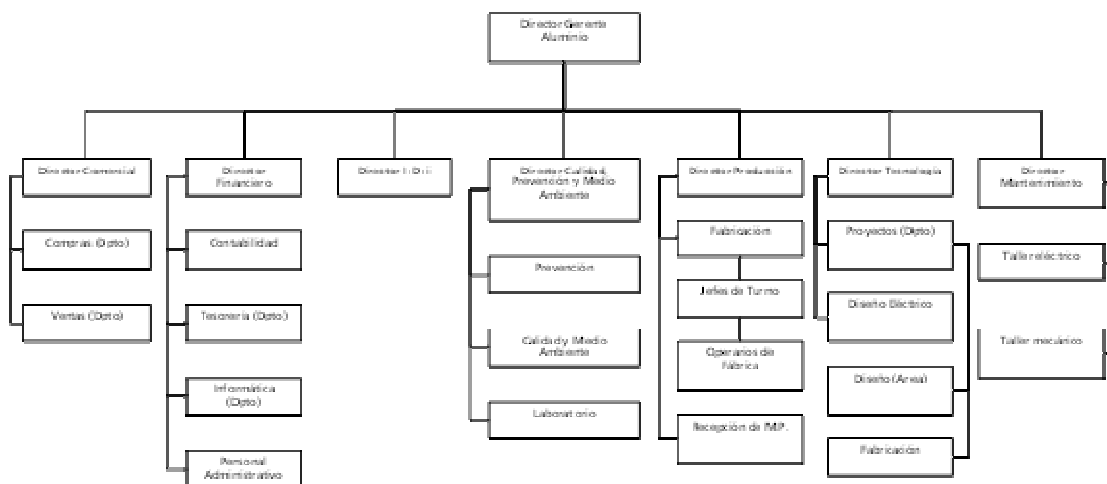


The Befesa Aluminio S.L. plant in Erandio makes the following end products:

- \* 10 kg ingots of aluminium and aluminium alloys for molding.
- \* 1,000 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 2: Organization chart of Erandio plant.**

The recycling and recovery process developed at the Erandio plant consists of two main processes: one of initial fusion of the materials in rotary furnaces and another of refining the final product in holding furnaces. Both these processes are carried out using equipment classified 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. These raw materials, once selected, are melted in the appropriate proportion to obtain the specification requested by the final customer, using for this purpose rotary

furnaces to which also certain amounts of salt are added as flux and protector of the molten aluminum. It should be mentioned in this section that during the year 2018 the company has addressed a relevant investment project with the replacement of the fixed rotary furnace with a new tilting rotary furnace of 65 tons of productive capacity.

The fusion of these materials well understood, is not only to bring to the liquid state the raw material, but also to dissolve the metal elements in suspension and promote some cleaning reactions of the material. It is this last feature that distinguishes rotary furnaces from other types of furnace. Verifying that the temperature of the furnace is adequate, that the material is melted and that the quality of the flux that is supernatant is that foreseen, the furnace is emptied in two stages, firstly removing the metal and ending with the melted molten salt or salt slag.

The gases produced during this smelting process are evacuated through separate purification systems, consisting of bag filters, where the solid particles are retained and where the acid combustion gases neutralization treatment is carried out at the same time by the controlled addition of lime.

In addition to replacing the fixed rotary furnace, during 2018 the company consolidated the smokestacks corresponding to the combustion of the rotary furnace No. 1, the combustion of the holding furnaces and the loading of the

holding furnaces, reducing the total number of stacks present in the company from 5 initial stacks to 3 final ones.

All the salt slag obtained because of the use of salt during the described fusion process, is completely recycled and recovered, generating an aluminium oxide (paval) that has various applications in multiple industrial sectors (cement industry, ceramic industry, insulation industry, etc.), definitively closing the circle of recovery of the aluminium waste described.



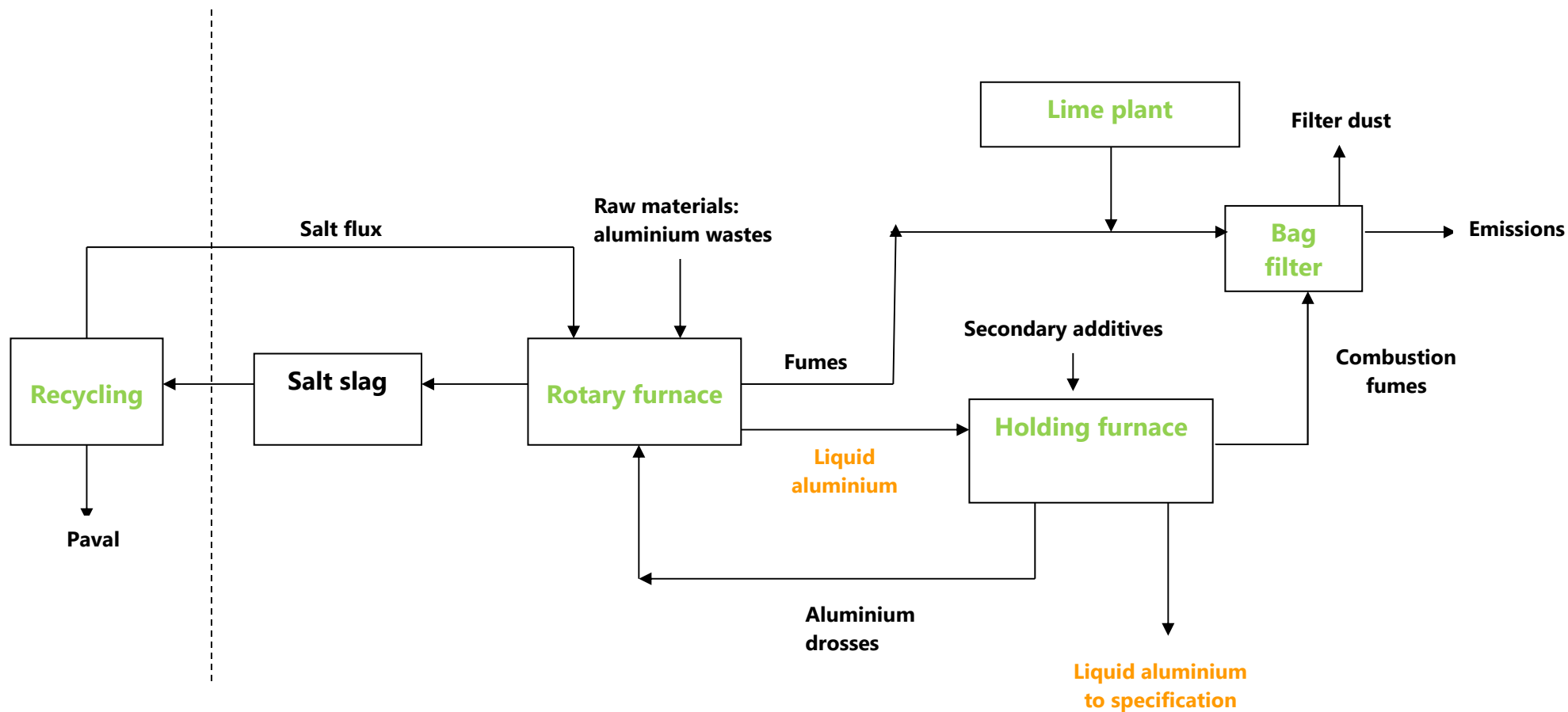
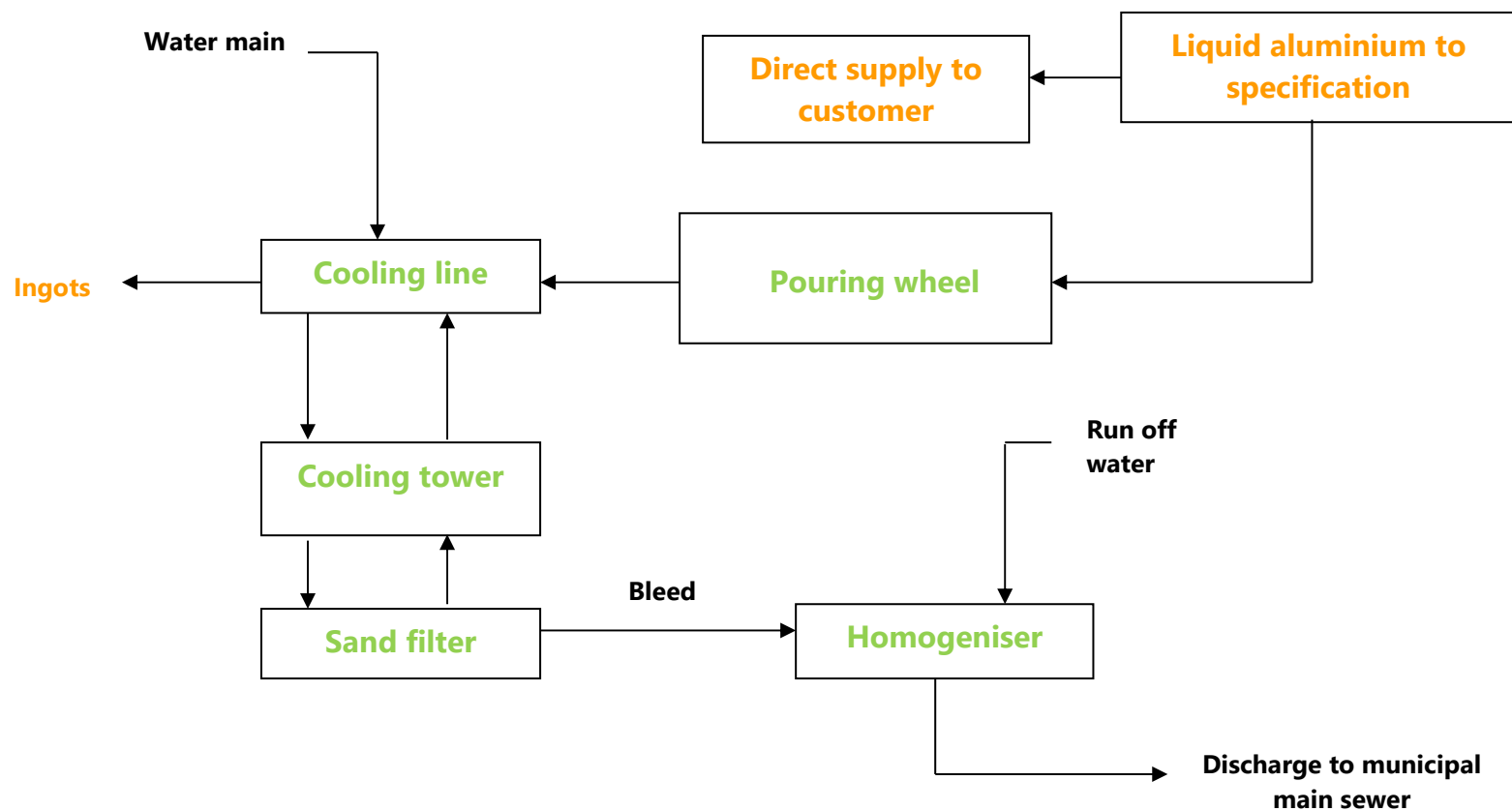


Illustration 3: Flow diagram of the process for obtaining aluminium in liquid form.

The raw materials, once melted in the rotary furnaces, are transferred in a second phase to the holding type furnaces, where the liquid aluminum is definitively adjusted to the requested specifications by means of fusion of addition elements such as Si, Cu or Mg. The holding furnaces are appropriate for this final phase of production, since they provide a metal at rest and that is adjusted in its quality parameters under controlled thermal conditions.

Once the metal has been skimmed and the temperature adjusted, the casting operation is carried out. Depending on the final product requested, the liquid aluminum is routed to the installation of liquid aluminum for road transport or to the casting wheel for the casting of ingots. The casting wheels are in turn made up of a chain of ingot molds that allow, with total reliability and high production sequence, the obtaining of high-quality surface ingots. The ingots are cooled, turned over and transported to the layered stacking machine, in which the formation of the stacks is completely automatic, by means of the use of a powerful computer that allows to obtain different formats of packages according to the requirements of the customers.

The water used during the cooling process is recirculated through cooling systems that consist of the corresponding filtering system in parallel. The waters coming from the purge of cleaning of the filtering systems previously referenced, are homogenized with the runoff waters, generating a single point of discharge to municipal sewer, that complies with all the limits imposed in the corresponding integrated environmental authorization.



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

The company has two production lines, with the total average production of finished product in recent years (2017/2019) at 52,816 t (see page 32), with approximately 50% of its market being foundries in the Basque Country, 20% in the national market and 30% foreign customers.

All the products supplied by the company go through a previous control of final quality and are perfectly identified in such a way that it is possible to maintain the total traceability of the same in relation to the manufacturing process, raw materials used, and controls carried out. All this is managed through our quality management system with ISO 9001 certification since 1995.

In addition, in accordance with its activities aimed at the conservation of natural resources and the protection of the environment, we consider it necessary to carry out our activity with the least possible local environmental impact. Aware of this need, we decided to implement an ISO 14001 environmental management system in 1999, which was subsequently verified according to the European EMAS regulation in 2004 with the registration number ES-EU-000023 and finally fulfilled with the ISO 50001 energy management system certification in 2016.

## **5. Representative environmental aspects of Erandio's plant**

The most representative environmental aspects of the company are the following:

### **A) Emissions into the atmosphere**

The company had 3 different smokestacks associated with the facilities that were part of the production process. These 3 stacks corresponded to the combustion of the rotary no. 1, combustion of the rotary no. 2 and combustion of laboratory furnaces.

Periodically an officially approved laboratory (OCA) performs sampling of the emissions produced in these described smokestacks, analyzing later the compounds that in each case mark the integrated environmental authorization.

To ensure the proper functioning of the purification systems, internal procedures have been developed, which are part of the integrated environmental management system, in which the continuous and periodic controls that must be carried out at the plant level are defined. to detect any anomaly, as well as the establishment of appropriate corrective actions.

### **B) Waste production**

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

- **Hazardous wastes**

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

- Salt slag: as a result of the use of salts (ClNa, ClK) in the form of flux to prevent unwanted oxidation of liquid aluminum inside the furnaces in contact with the atmosphere. Mentioned salt slag is totally recycled in what constitutes a fully integrated process of aluminum waste treatment within the Befesa business group, giving rise to a new salt capable of being used in new production processes and an inert waste rich in aluminum oxide, called paval, which has countless applications in the industry.
- Filter dust: as a consequence of the treatment of combustion gases through the purification systems present in the factory. They are stored under cover in big-bags or silos until their final shipment to an authorized agent.
- Aluminium dross: as a consequence of the oxidation process of the aluminum inside the holding type furnaces. They are used as raw material in new production processes due to the corresponding self-management authorization for this type of material.
- Filter bags: as constituents of the combustion gas purification systems. Damaged bags are replaced and self-managed by the company itself when counting the company with the corresponding permit.
- Used oils: from the maintenance operations of the facilities and machinery, they are stored in duly identified and dated drums awaiting their shipment to an authorized manager.
- Empty metallic and plastic containers: containers that have contained paints, solvents, oils, etc. They are stored in perfectly identified and dated cages for shipment to an authorized manager.

- Industrial sprays: because of the use of sprays in the process of identifying the stacks of finished product ingots. They are stored in perfectly identified and dated big-bags waiting to be sent to an authorized manager.
- Absorbents, rags and contaminated clothing: from maintenance operations, they are stored in properly identified and dated drums until their final shipment to an authorized manager.
- Used batteries: dry mercury batteries / button cells, coming from calculators and watches, as well as saline and alkaline batteries that are selectively collected.
- Luminaires: lighting lamps from maintenance operations (breakage, cast lamps, etc.). They are stored in a properly identified container.

The company has the corresponding acceptance documents from each of the authorized managers with whom it manages the aforementioned hazardous waste.

- **Inert wastes**

The industrial inert waste produced in the plant is basically that coming from the repairs, reforms or improvements that comply with the aforementioned definition. It is managed as follows:

- Scrap: It is available in a container enabled for this purpose. When this is full capacity, it is notified to a company dedicated to the removal of this type of materials.
- Refractory bricks, wood, plastics and rubbers: The refractory used is generated because of the maintenance of the coating of the rotary and holding type melting furnaces. On the other hand, wood, plastics and rubber

appear because of civil works carried out in the company. This type of waste is managed properly.

### **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, nitrogen, natural gas, electricity, water, raw materials and fluxes.



## 6. Significant environmental aspects of Erandio's plant

As a basis for the definition of environmental objectives, direct and indirect environmental aspects are evaluated on an annual basis. For this, criteria such as probability and severity are applied, obtaining the individual degree of significance of each of them. This allows to determine the future work areas on which to centralize efforts, in order to minimize the company's global environmental impact.

Considering the criteria of severity and probability previously referenced and after applying the rest of the criteria applied by the company in the process of internal evaluation of all its environmental impacts, the direct impacts defined as significant for the year 2019 are summarized below:

- Generation of filter dust because of the combustion fumes depuration process which is associated to the potentially hazardous waste contamination environmental aspect.
- Generation of uralites because of old roofs substitution processes which is associated to the potentially hazardous waste contamination environmental aspect.
- Confined emission of SO<sub>2</sub>, NO<sub>x</sub>, HCl, HF, heavy metals and particles, because of the routine operation of fusion of materials in rotary, holding and laboratory furnaces which is associated to the potentially air pollution environmental aspect.
- Generation of used refractory bricks because of civil works which is associated to the potentially inert waste contamination environmental aspect.

- Diesel consumption used in the front loaders and forklift trucks movement which is associated to the reduction of natural resources environmental aspect.

For all the impacts classified as significant, Befesa Aluminio, S.L. establishes a strict and periodic control of the same, associating at the same time strategic objectives and environmental indicators of control and improvement, which allow it to guarantee the present and future environmental performance of the company.

Befesa Aluminio, S.L. also monitors and evaluates indirect environmental aspects, including those aspects for which it does not have full capacity to act. As main indirect environmental aspects in the [year 2019](#), we highlight the following:

- Generation of used oils and batteries by subcontracted transport companies.
- Generation of emissions and ammonia odor associated with potentially wet raw materials.
- Potential presence of radioactivity associated with the raw materials received.
- GHG emissions associated with services and suppliers.

## 7. Outline of environmental targets and goals 2019

Every year, a series of environmental objectives are established, which are included in the annual environmental plan, where the goals associated with each of them are defined, as well as the corresponding definition on of human and material resources. Below is a table showing the degree of achievement of the objectives established in 2019, as well as a brief summary of the causes that justify this degree of compliance:

Aspect	Goal	Expected value	Result
CO <sub>2</sub> emissions	To reduce by 2% the emissions of greenhouse gases associated with secondary aluminium production.	-2 %	+ 4.67 %
Natural gas consumption	To decrease by 2% the total consumption of natural gas used in the activity associated with the production processes of the plant	-2 %	- 9.30 %
Salt slag generation	To decrease 2% the generation of salt slag generated during the activity associated with the production processes of the plant	-2 %	- 17.20 %
Electricity consumption	To reduce by 2% the electrical consumption used during the activity associated with the productive processes of the plant	-2 %	- 3.88 %
Fluxes consumption	To reduce by 2% the consumption of flux used during the activity associated with the productive processes of the plant	-2 %	+ 15.79 %
Oxygen consumption	To reduce by 2% the oxygen consumption used during the activity associated with the productive processes of the plant	-2 %	- 14.29 %
Diesel consumption	To reduce by 2% the consumption of diesel used during the activity associated with the productive processes of the plant	-2 %	- 22.90 %
Total emissions generation	To reduce total chimney emissions by 2%	-2 %	- 5.38 %
Water discharge	To reduce by 2% the pollutant content of wastewater discharges	-2 %	- 66.02 %
Filter dust generation	To reduce filter dust generation by 2%	-2 %	+ 37.50 %

- **To reduce by 2% the emissions of greenhouse gases associated with secondary aluminium production.**

At the beginning of 2019, a joint objective of minimizing GHG emissions was defined for the centers that make up Befesa Aluminio, S.L. This objective was associated with emission sources corresponding to the two types of scope that are included in the company's inventory and which refer to direct emissions (scope 1) and indirect emissions (scope 2). After computing the emissions of these sources throughout the year 2017, it has been observed that Befesa Aluminio, S.L. has not met the objective of minimization proposed, presenting a percentage of relative degradation of 4.67 % (0.2978 teq CO<sub>2</sub>/ t in 2019 versus 0.2845 teq CO<sub>2</sub>/ t in 2018), mainly due to the minor productions obtained at Les Franqueses plant as a consequence of the important structural changes and installation works carried out throughout the year 2019.

- **To decrease by 2% the total consumption of natural gas used in the activity associated with the production processes of the plant.**

The relative consumption of natural gas has improved substantially in 2019 (1.17 MWh / t), with respect to the values reached in 2018 (1.29 MWh / t) mainly due to the optimization and entry into a stationary regime of the new process facilities that were installed in the production plant in 2017 (new holding furnaces) and 2018 (new tilting rotary furnace). In addition to the better energy efficiency characteristics presented by the new facilities compared to the replaced facilities, during 2019 the company has progressively optimized their use and exploitation, which has made the energy efficiency of our processes in terms of natural gas to be improved by 9.30%.

- **To decrease 2% the generation of salt slag generated during the activity associated with the production processes of the plant.**

The objective of reducing the generation of salt slag has been widely achieved, mainly due to the new tilting rotary furnace installed at the plant in 2018, which is less demanding of salt fluxes than the replaced fixed rotary furnace. It must be added the positive effect of the use of less powdery raw materials with a higher metallic yield throughout 2019. The relative value of salt slag in 2019 was 0.77 t / t, which clearly improves the value obtained in 2018 of 0.93 t / t.

- **To reduce by 2% the electrical consumption used during the activity associated with the productive processes of the plant.**

Relative electricity consumption during 2019 (0.099 MWh / t) has decreased with respect to the values obtained in 2018 (0.103 MWh / t). The initially proposed reduction objective has been achieved, mainly due to the optimization and stationary regime of the new facilities incorporated into the production plants during 2018 and 2019, mainly highlighting the unification of the plant's aspiration systems. of Remetal plant in Erandio in a single focus. All this has meant that the relative electricity consumption during the year 2019 is improved by 3.88%.

- **To reduce by 2% the consumption of flux used during the activity associated with the productive processes of the plant.**

The relative consumption of salt flux has worsened in 2019 (0.44 t / t), a total of 15.79%, with respect to the values of 2018 (0.38 t / t). Therefore, the objective has not been achieved, mainly because of the unrealistic value achieved in 2018 in which

a lot of final product was produced by means of remelting processes of ingots in the holding furnaces of the Erandio plant due to the structural works of the rotary furnace previously mentioned and that evidently were not demanding of salts.

- **To reduce by 2% the oxygen consumption used during the activity associated with the productive processes of the plant.**

The relative oxygen consumption in 2019 reached a value of 0.12 t / t, compared to the value of 0.14 t / t in 2018. The reduction objective initially established has been achieved, mainly due to improvements in the management of production processes and the optimization of the management of the new infrastructures installed throughout 2018 and 2019.

- **To reduce by 2% the consumption of diesel used during the activity associated with the productive processes of the plant.**

Throughout 2019, the relative consumption of diesel was 1.65 L / t, compared to the consumption in 2018 of 2.14 L / t. The objective set at the beginning of the year has been widely achieved, due to the improvement in the average metallic yield of the raw materials used, which has led to a lower need for transferring materials through the use of the company's mobile equipment (front loaders and forklift trucks).

- **To reduce total chimney emissions by 2%.**

The total emissions of all the sources present in the facilities, taking into account the pollutants HCl, HF, NO<sub>x</sub>, SO<sub>2</sub> and solid particles, have reached a value throughout

2019 of 1.06 kg / t compared to the value of 1.13 kg / t in 2018, which represents a decrease of 5.38%. The objective has been achieved mainly due to the optimization of the capture system of the new filter associated with the new tilting rotary furnace, much more efficient than the replaced filter.

- **To reduce by 2% the pollutant content of wastewater discharges.**

The total pollutant load of the water discharged throughout 2019, considering the pollutants SST, NH<sub>3</sub>, Zn, Fe and Cu, has risen to 17.06 g / m<sup>3</sup>, which represents an improvement of 66.02% compared to the pollutant load of 2018 (50.20 g / m<sup>3</sup>). All the parameters of the discharge waters more than comply with the limit values established in the company's Integrated Environmental Authorization.

- **To reduce filter dust generation by 2%.**

The relative amount of filter dust generated throughout 2019 has reached values of 0.044 t / t, which represents a decline of 37.50% compared to the values of 2018 (0.032 t / t). This has been mainly due to the new aspiration filter installed in the production plant at the end of 2018, which has much higher absorption characteristics than the old filters that has replaced.

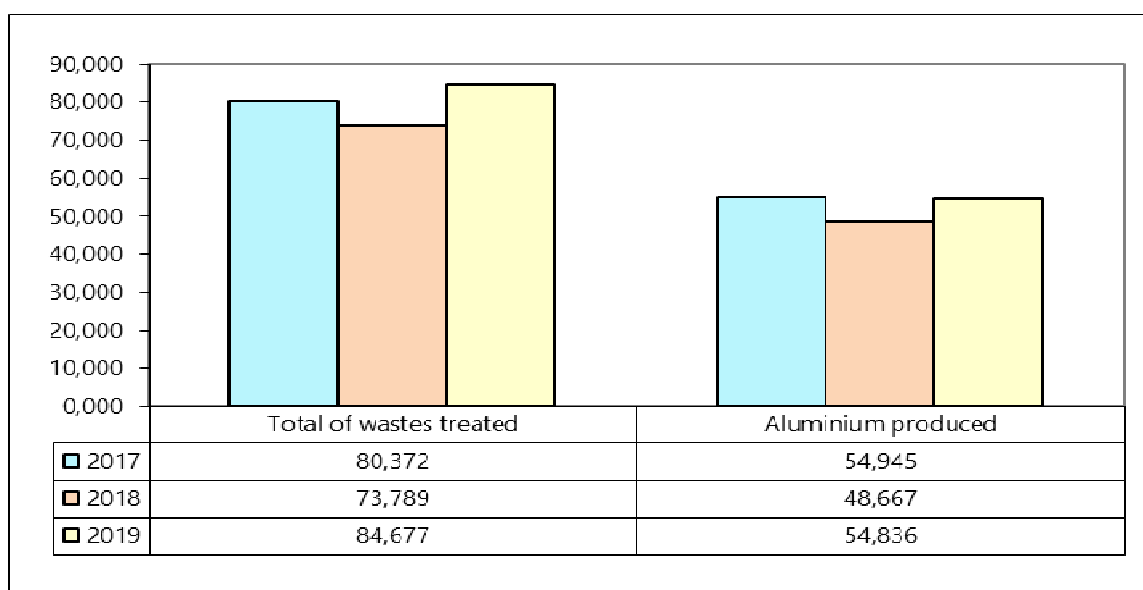
## 8. Environmental performance of the company

The following sections reflect the environmental performance of the company:

### 8.1 Aluminium waste recycling for aluminium recovery

All materials received except the so-called fluxes (NaCl and KCl), are considered as waste according to national and European regulations currently in force. These materials come mainly from other primary and secondary aluminium smelters and from aluminium scrap collectors that have their origin in the market of parts machining, scrapping of vehicles and household appliances and product cuts. The main function and motivation throughout our production process is the total recovery of mentioned secondary waste as a direct alternative to primary aluminium obtained from the transformation of natural resources.

The total quantities of waste treated in the last 3 years, as well as that of secondary aluminium obtained because of the recycling operation carried out, are detailed below.



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



## 8.2 Energy consumption

The absolute (MWh) and relative consumption (amount per ton of product manufactured) of the main energy resources used in the production process corresponding to the last 3 years are shown below. Throughout the year 2019 there has been a total direct consumption of renewable energies amounting to 10.5 %, corresponding to the renewable part of the total electricity consumed and a total generation of renewable energy equal to 0 Mwh.

Renewable energy consumed	2017	2018	2019
Consume (MWh)	878.1	681.3	571.7
Relative consume (MWh/ t)	0.016	0.014	0.010

- **Natural gas**

The fuel used is the natural gas used in the smelting and refining processes of the rotary and holding type furnaces. The supply of natural gas is carried out through a regulation and measurement station (ERM) with a capacity of 2,825 m<sup>3</sup>/ h and a distribution pressure of 2,5 kg/ cm<sup>2</sup>. This installation has a document accrediting the start-up date of January 2, 1992.

Natural gas	2017	2018	2019
Consumption (MWh)	67,703.6	62,856.0	64,364.76
Relative consumption (MWh/ t)	1.23	1.29	1.17

The relative consumption of natural gas has decreased in 2019 (1.17 MWh / t), with respect to the values reached in 2018 (1.29 MWh / t) mainly due to the optimization and entry into a stationary regime of the new process facilities that were installed in the production plant during 2017 and 2018. In addition to the better energy efficiency characteristics that the new facilities present compared to the replaced facilities, during 2019 the company has progressively optimized their use and exploitation, which has also contributed positively to relative gas consumption values.

- **Electricity**

The electricity supply to the facilities is carried out through a transformation center of 2,500 kW with control and distribution board, which is located in a perfectly delimited enclosure, and through a substation of 2,000 kW outdoors, perfectly signposted and isolated from the rest of the plant. There is an energy network at 220 and 380 V throughout the factory.

<b>Electricity</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
<b>Consumption (MWh)</b>	4,746.5	5,009.6	5,445.2
<b>Relative consumption (MWh/ t)</b>	0.086	0.103	0.099

Electricity consumption per ton of manufactured product has decreased in 2019, mainly due to the optimization and stationary operation of the new facilities incorporated into the production plant during 2017 and 2018, mainly highlighting the unification of the Remetal plant aspiration systems in a single source.

### **8.3 Secondary materials consumptions**

The absolute (t) and relative consumption (amount per t of manufactured product)

of the main secondary materials used in the process production corresponding to the last 3 years are included in the following points.

- **Salt flux**

The fluxing salt is mainly a mixture of NaCl and KCl, which is added to the interior of the rotary type furnaces, together with the rest of the main raw materials. The mission of the flux salt is to protect the molten aluminium from possible unwanted oxidations, while being a recipient of the impurities that can potentially accompany the raw materials used. The use of the flux salt generates a hazardous waste called salt slag, which is completely recycled inside Befesa, giving rise in turn to an aluminium oxide that has various applications in the industry.

Salt flux	2017	2018	2019
Consumption (t)	26,244	18,519	24,395
Relative consumption (t/ t)	0.48	0.38	0.44

The relative consumption of flux salt has increased in 2019 with respect to the values reported in 2018, mainly due to the unreal value achieved in 2018, in which a lot of final product was produced through ingot remelting processes in holding furnaces.

- **Oxygen**

In the facilities there are two oxygen tanks that are owned by gas supplier. Oxygen is used as an integral part of the fuel used in the melting processes of rotary and holding furnaces. The storage tanks are located in a fenced area outside the facilities. There are networks of the aforementioned gas throughout the factory.

Oxygen	2017	2018	2019
Consumption (t)	8,257	6,842	6,591
Relative consumption (t/ t)	0.15	0.14	0.12

Specific oxygen consumption has improved compared to the data reported in 2018, mainly due to improvements in the management of production processes and the optimization of the management of the new infrastructures installed throughout 2018.

- **Diesel**

In Befesa Aluminio, S.L. diesel is used exclusively as a supply for mobile machinery (forklifts and front loaders). The company has two diesel tanks that comply with the provisions of current legislation.

Gasoil	2017	2018	2019
Consumption (GJ)	3,499	4,266	3,710
Relative consumption (GJ/ t)	0.064	0.088	0.068

As can be seen in the table, the specific consumption of diesel in 2019 has decreased compared to 2018, mainly due to the improvement in the average metallic yield of the raw materials used, which has led to a lower need to transfer materials through the use of the front loaders and forklift trucks.

- **Lime and sodium bicarbonate**

Lime and sodium bicarbonate are used for the treatment of acid gases that are generated during the combustion process (HCl and HF). Sodium bicarbonate ceases to be used in the second half of 2018 after the installation of the new tilting type rotary furnace and its associated filter, where acid gas treatment is carried out with lime.

Lime	2017	2018	2019
Consumption (t)	79.56	60.56	144.92
Relative consumption (kg/ t)	1.45	1.24	2.64

Sodium bicarbonate	2017	2018	2019
Consumption (t)	48.0	5	0
Relative consumption (kg/ t)	0.87	0.10	0

#### 8.4 Water consumption

The Erandio plant does not perform any pre-treatment of the received water. Nor does the plant takes water from any public well, spring or other watercourse. The water used, both in the productive processes and in the supply of the offices, comes entirely from the municipal network of the Bilbao Bizkaia Consortium. The industrial waters that are used for the cooling processes of the casting of liquid metal in the manufacturing lines of aluminium ingots, are recirculated through semi closed circuits in which the waters are cooled and prepared for their reuse through towers of refrigeration. The percentage of recirculation is practically 100% (except the washings in countercurrents of the sand filters in parallel to the cooling towers), providing fresh water as evaporation occurs. It is estimated that 90% of the water used in the cooling process evaporates during these operations.

It is worth mentioning that, as of the second semester of 2018, the company has installed a new demanding water installation, consisting of a salt slag cooler. The slags generated during the productive processes are fed to a trommel that, through an external water bath, generates the cooling process. The waters used are also recirculated in closed circuit. On the other hand, the use of office supply water focuses on consumption for offices, workshops, laboratories and changing rooms.

The company has a general meter, as well as partial meters distributed throughout

the plant, which allow knowing the total consumption of water entering the factory, as well as partial consumption for each of the facilities or uses.

Water	2016	2017	2018
Consumption (m <sup>3</sup> )	31,613	40,051	50,351
Relative consumption (m <sup>3</sup> / t)	0.57	0.73	1.03

The relative consumption of water during the year 2018 has been higher than the consumption of the year 2017, mainly due to the water consumption associated with the new demanding installation of the slag cooler.

## 8.5 Waste management

Throughout the year 2019 a total of 44,508 t of hazardous waste have been generated and a total of 856 t of non-hazardous waste. The evolution of the generated and managed hazardous waste most representative of the activity carried out over the last 3 years is shown in the following table:

Waste managed	2017	2018	2019
Total generation of hazardous waste (t)	52,536	47,892	44,508
Relative generation of hazardous waste (t / t)	0.956	0.984	0.812
Salt slag produced (t)	51,257	45,325	42,100
Relative salt slag generation (t/ t)	0.93	0.93	0.77
Filter dust produced (t)	1,277	1,547	2,403
Relative filter dust generation (t/ t)	0.023	0.032	0.044
Aluminium dross produced (t) (*)	1,900	1,000	1,100
Relative aluminium dross generation (t/ t) (*)	0.035	0.021	0.020
Refractory bricks generation and debris (t)	351	1,006	180
Refractory bricks generation and debris (t / t)	0.006	0.022	0.003
Asbestos generation (t)	-	3.75	-
Relative asbestos generation (Kg/ t)	-	0,077	-

(\*) Estimated figure. All of the aluminium drosses generated as waste was incorporated into the production process

The relative amount of saline slag generated has been improved and that of filter dust has increased, mainly due to the new aspiration bulb installed in the production plant at the end of 2018, which presents much higher absorption characteristics than the old bulbs those it has replaced.

The amount of refractory and rubble decreases significantly due to the high figure achieved in 2018 due to the civil works carried out during that year. During 2018 all the uralite present in the plant was definitively eliminated.

## 8.6 Impact on the biodiversity

The total occupation of our facilities is 32,614 m<sup>2</sup> of which 12,675.9 m<sup>2</sup> are built.

The total sealed area equals the total land use. The total area in the center oriented according to nature is equal to 0 as well as the total area outside the center oriented according to nature. Considering that the occupied surface built has not changed in the last 3 years, the relative occupation of soil per ton of product manufactured is the one represented below:

Land area	2017	2018	2019
Relative land area (m <sup>2</sup> / t)	0.23	0.26	0.23

## 8.7 Emission of pollutants into the atmosphere

### 8.7.1 Greenhouse gases (GHGs)

Since 2008, Befesa Aluminio, S.L. has implemented a global GHG emissions inventory for the three centers that make up the aluminium business line (Erando, Les Franqueses and Bernburg). In it, both direct and indirect emissions are calculated, following the methodology indicated in the ISO 14064 standard. An

independent verification report of the mentioned inventory is available.

Direct emissions are defined as those associated with those sources that are under the control of society, such as emissions from the combustion process in furnaces, emissions from machinery or vehicles, emissions from process equipment and fugitive emissions from equipment and facilities. Indirect emissions are those derived from the consumption of electrical energy. The direct and indirect emissions of the last three years are shown in the following table:

GHG emissions	2017	2018	2019
Annual total for direct emissions (t CO <sub>2</sub> eq)	45,777.9	45,158.7	46,377.7
Relative annual total for direct emissions (t CO <sub>2</sub> eq/ t)	0.2486	0.2594	0.2642
Annual total for indirect emissions (t CO <sub>2</sub> eq)	5,577.7	4,602.4	5,895.2
Relative annual total for indirect emissions (t CO <sub>2</sub> eq/ t)	0.030	0.026	0.034

### 8.7.2 Emissions of other pollutants into atmosphere

The total emissions of SO<sub>2</sub>, NO<sub>x</sub> and particles corresponding to the last years in absolute and specific values per ton of product manufactured are shown in the following table. In none of the smokestacks is CH<sub>4</sub>, HFC, PFC, NF<sub>3</sub> or SF<sub>6</sub> emitted:



Emissions of other pollutants	Year	Emissions (t)	Relative emissions (kg/ t))
<b>SO<sub>2</sub></b>	<b>2017</b>	< 9.85	< 0.18
	<b>2018</b>	< 12.91	< 0.27
	<b>2019</b>	< 4.81	< 0.088
<b>NO<sub>x</sub></b>	<b>2017</b>	14.83	0.27
	<b>2018</b>	< 39.32	< 0.81
	<b>2019</b>	< 50.59	< 0.92
<b>Solid particles</b>	<b>2017</b>	1.18	0.021
	<b>2018</b>	1.37	0.028
	<b>2019</b>	1.29	0.024
<b>HCl</b>	<b>2017</b>	0.59	0.011
	<b>2018</b>	< 0.89	< 0.018
	<b>2019</b>	< 1.03	< 0.019
<b>HF</b>	<b>2017</b>	0.09	0.002
	<b>2018</b>	< 0.49	< 0.010
	<b>2019</b>	< 0.31	< 0.006
<b>Heavy metals</b>	<b>2017</b>	0.009	0.0002
	<b>2018</b>	--	--
	<b>2019</b>	0.126	0.0022

## 8.8 Environmental performance regarding legal provisions

### 8.8.1 Emission-Smokestacks

During the second semester of 2018, a substantial modification was carried out to the smokestacks present in the facilities, combining in a single stacks those ones corresponding to the rotary furnace No. 1, the combustion gases from the holding furnaces and the gases from the holding furnaces loading area. As of 2019, the stacks are reduced to a total of 3 stacks corresponding therefore to the combustion focus of the rotary No. 1, the combustion focus of the rotary no. 2 and the focus of

the laboratory furnaces.

The following tables show the values measured in recent years in all the stacks present in the facilities (except for the new stack installed in 2019 - rotary kiln 1), as well as their comparison with the maximum permitted limit values established in the Integrated Environmental Authorization.

- Combustion fumes from rotary furnaces nº 1**

This source removes the purified gases from rotary furnace No. 1, as well as the combustion gases and emissions produced in the loading area of the holding type furnaces. Rotary and holding type furnaces use natural gas and oxygen as fuel for melting materials and adjusting process temperatures. The collection system is constituted in a first step by a cooling system in charge of reducing the temperature of the gases coming from the combustion process. In a second step, the cooled combustion gases are led through a bag filter where, in addition to retaining the solid particles in suspension, the acid gas neutralization treatment is carried out by controlled addition of lime.

Parameters		SO <sub>2</sub>	NO <sub>x</sub>	HCl	HF	CO	Zn+Pb +Cr+C u+Mn	Ni+As	Cd+Hg	Solid particles	PCDD/ PCDF	COT
Limit as per integrated environmental authorization (mg/ Nm <sup>3</sup> )		50	300	30	5	500	-	-	-	20	0.5 (*)	50
Average for rotary furnace nº1 (mg/ Nm <sup>3</sup> )	2019	< 0.97	< 32.17	1.04	< 0.31	< 75.17	0.09711	0.0008	0.00673	< 0.81	0.0039	13.66

(\*) Limit of PCDD / PCDF expressed in ng TEQ / Nm<sup>3</sup>

Throughout 2019, all the measured parameters are below the established limits.

- Combustion fumes from rotary furnaces nº 2**

The purified gases from rotary furnace nº2 are eliminated through this focus.

Rotary furnace nº 2 also uses natural gas and oxygen as fuel. The collection system is exactly the same as that corresponding to the rotary furnace o. 1 previously described.

Parameters		SO <sub>2</sub>	NO <sub>x</sub>	HCl	HF	CO	Zn+Pb +Cr+Cu+Mn	Ni+As	Cd+Hg	Solid particles	PCDD/ PCDF	COT
Limit as per integrated environmental authorization (mg/ Nm <sup>3</sup> )		50	300	30	5	500	-	-	-	20	0.5 (*)	50
Average for rotary furnace nº1 (mg/ Nm <sup>3</sup> )	2017	20	31.00	0.46	0.04	294.00	0.019	0.0007	0.0011	2.37	0.005	10.77
	2018	12.19	29.67	0.27	1.49	123.67	-	-	-	1.74	0.0089	< 3.87
	2019	5.24	< 29.5	< 0.15	< 0.05	< 123.5	0.03393	0.00047	0.00992	< 0.077	0.016	12.33

Throughout 2019, all the measured parameters are below the established limits.

- Laboratory furnaces**

The installation of laboratory furnaces consists of 2 crucible furnaces of reduced size, which are used in the characterization of the raw materials received. The associated purification system is constituted by a bag filter in which the solid particles are retained, marking a biennial periodicity for their measurements.

Parameters		HCI	COT
Limit as per integrated environmental authorization (mg/ Nm <sup>3</sup> )		30	–
Figures for laboratory furnaces (mg/ Nm <sup>3</sup> )	2017	0.13	1.83
	2018	--	--
	2019	< 0.13	2.10

### 8.8.2 Emissions discharge into the sewer

The water outlets of the plant are divided according to their origin as follows:

- Industrial origin.

These are the waters that come from the semi-closed cooling circuits (punctual purges in back-washings of the filters of the cooling towers), together with the runoff waters collected inside the plant.

- Domestic origin.

They are the sanitary waters coming from the offices and changing rooms.

At the beginning of 2007, the definitive connection to the municipal water sewer of the Bilbao Water Consortium was made of all the waters previously described. The company has a single point of discharge which discharges directly into the municipal sewer. The total calculation of the discharge waters during the year 2019 reaches the value of 25,961 m<sup>3</sup>.

The characterization of the spill is carried out based on the quarterly analyses carried out by the Bilbao Water Consortium itself. The values referenced in the attached table are average values of the 4 annual analyses. Below are the measurements corresponding to the last 3 years carried out by the aforementioned entity, as well as the legal limits imposed by the integrated environmental authorization:

Parameters	Limits set in integrated environmental authorization	Average readings for discharges		
		2017	2018	2019
PH	6.0-9.5	8.13	8.25	7.77
Ammonia	300 mg/ L	7.03	10.80	1.76
Zn	15 mg/ L	0.12	0.15	0.08
Cu	7.5 mg/ L	0.07	0.08	0.05
Fe	150 mg/ L	0.57	0.66	0.50
Solids in suspension	600 mg/ L	25.25	38.50	14.67

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

### 8.8.3 Other environmental performance indicators

The integrated environmental authorization establishes a three-year periodicity for measurements of external noise associated with the activity of the company. Throughout the year 2018, environmental noise measurements were taken, measuring at 7 specific points in the company's environment. The results obtained were the following:

Noise levels measurements 2018			
Limits set in integrated environmental authorization db(A)	Morning	Evening	Night
	78	78	68
Point 1	57.0	57.1	56.1
Point 2	72.2	68.3	67.5
Point 3	59.6	56.6	56.4
Point 4	60.4	57.6	56.8
Point 5	73.5	64.8	62.6
Point 6	72.9	67.6	66.5
Point 7	64.6	65.3	65.0

As can be seen, no point exceeds the legally established limit.

The realization of the replacement works of the fixed rotary furnace carried out during 2018, involved the necessary excavation and earthworks, detecting the presence of an old deposit buried with fuel with the consequent impregnation of land in hydrocarbons. The set of affected lands was corrected by an accredited external company, and in April 2019, the basic soil report for all the facilities was submitted.

## 9 Environmental targets 2020

To comply with the commitment of continuous improvement in environmental action in accordance with what is established in the environmental policy and in terms of the environmental aspects identified as significant, environmental objectives are defined for the 2020 period, which are the following:

- To reduce by 2% the emissions of greenhouse gases associated with the production of secondary aluminium.
- To reduce by 2% the total consumption of natural gas used in the activity associated with the production processes of the plant.
- To reduce by 2% the generation of salt slag generated during the activity associated with the production processes of the plant.
- To reduce by 2% the electricity consumption used during the activity associated with the production processes of the plant.
- To reduce by 2% the consumption of flux used during the activity associated with the production processes of the plant.
- To reduce by 2% the confined emissions of SO<sub>2</sub>, NO<sub>x</sub>, HCl, HF, CO, heavy metals and solid particles.

## 10 Applicable environmental legislation

Befesa Aluminio, S.L. is part of sectoral associations that, on a monthly basis,

identify, supply and update legal texts. With this information, the new requirements or their modifications are extracted, and the own legislative database is updated, with the requirements applicable to the company. Befesa Aluminio, S.L. performs a continuous check of compliance with its legal requirements, and it is found that there is no non-compliance of environmental or industrial safety.

The following is a non-exhaustive list of the most relevant applicable environmental legislation:

- 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 14<sup>th</sup>, 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.



- Resolution of February 14th, 2017 by the Basque Government Environment Office, which substantially modifies the integrated environmental authorization of Befesa Aluminio, S.L. because of the request for an increase in the annual production capacity of the plant.
- Resolution of June 15th, 2018 of the Basque Government Environment Office by which the integrated environmental authorization of Befesa Aluminio, S.L. is not substantially modified, incorporating the modifications corresponding to the replacement of the fixed rotary furnace by a tilting rotary one, the unification of several emission smokestacks in one and the installation of a salt slag cooling system.
- 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 (firefighting systems, oil installations, high voltage, low voltage, air conditioning, etc.).
- Legionella control associated to cooling systems to produce solid aluminium alloys.
- Royal Decree 252/2006, of March 3, which revises the recycling and recovery targets established in Law 11/1997, of April 24, on packaging and packaging waste, and which modifies the Regulation for its execution, approved by Royal Decree 782/1998, of April 30.
- Law 22/2011 of Wastes and contaminated floors.
- European Agreement for the international road transport of dangerous goods.

## 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 Organizations). The company is an active member of the Environment Committee of this organization.
- EAA (Organization 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 programs with various research centers and other European firms, mainly for the improvement of recycling, valorization and the best possible use of aluminium industry waste.

## 12 Participation

Befesa Aluminio, S.L. enhances the participation of all its workers in the determination of key environmental processes. In order to do so, it facilitates ways

of communicating problems and suggestions for improvement, while at the same time employing the Company Committee established for participation and direct communication with all the members of the company.

## **13 Availability**

This environmental declaration is accessible via the corporate website

[www.befesa.es](http://www.befesa.es).

## **14 Next environmental declaration**

This environmental statement is intended to inform employees, authorities, customers, suppliers, media and neighbors about our management policy and also to propose a constructive dialogue.

It is a public document validated by Bureau Veritas Iberia, S.L. environmental verifier accredited by ENAC with the number ES-V-0003 and domiciled in the street Valportillo first 22-24 mahogany building- 28108- Alcobendas (Madrid).

The environmental declaration is valid for 12 months, with the following declaration validated in [June 2021](#).

If you want to know more details about Befesa Aluminio, S.L. Erandio plant and its products, see our page [www.befesa.es](http://www.befesa.es). If you would like additional information in the future, please do not hesitate to contact Mr. Oskar de Diego Rodríguez at:

**Tlph: 94-4530200**

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**Glossary:****kg:** kilogram.**Si:** silicon.**Cu:** cooper.**Mg:** magnesium.

mm: millimeters.

**t:** ton.**t CO<sub>2</sub> eq:** CO<sub>2</sub> equivalent tons.**MWh:** megawatt per hour.**m<sup>3</sup>:** cubic meter.**HCl:** hydrochloric acid.**HF:** hydrofluoric acid.**NO<sub>x</sub>:** nitrogen oxides.**SO<sub>2</sub>:** sulphur dioxide.**SST:** solids in suspension.**NH<sub>3</sub>:** ammonia.**Zn:** zinc.**Fe:** iron.**g:** gram.**NaCl:** sodium chloride.**KCl:** potassium chloride.**cm<sup>2</sup>:** square centimeter.**h:** hour.**kW:** kilowatt.**V:** volt.**R&D:** research and development.**m<sup>2</sup>:** square meter.**GHG:** greenhouse gases.**mg/ Nm<sup>3</sup>:** milligram per normal cubic meter.**Pb:** lead.**Cr:** chromium.**Mn:** manganese.**Ni:** nickel.**As:** arsenic.**Cd:** cadmium.**Hg:** mercury.