

**Befesa Aluminio S.L.**

**Valladolid Centre**

**Environmental statement**

**2013**

# **BEFESA**

## **Befesa Aluminio (Valladolid).**

The purpose of this environmental statement is to integrate the two existing authorisations granted to Befesa Aluminio, S.L. (Valladolid work centre) (NACE Rev 2 code 38.32) into a single document as a result of the absorption of Befesa Escorias Salinas, S.A.

It has been prepared based on the requirements established in the ISO 14001:2004 environmental management standard and Regulation 1221/ 2009 of the European Union.

This environmental statement is valid for 12 months. The next validated statement will be issued in August 2014.

Befesa Aluminio. S.L. (Valladolid).

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## **1. Description of the company's EMAS registration**

### **1.1 European Union Regulation UN 1221/ 2009.**

Regulation n° 1221/ 2009 on the eco-audit system, which repeals Regulation n° 761/ 2001 and Decisions 2001/ 681/ EC and 2006/ 193/ EC of the Commission, known by the acronym EMAS (Eco-Management and Audit Scheme), enables organisations to voluntarily participate in a European environmental management and audit system.

This regulation contains four key commitments:

- Internal control of the environmental impacts of processes and their corresponding registration, under the basic assumption of compliance with applicable environmental legislation.
- Continuous reduction of these impacts, defining and publishing targets and actions in order to achieve them, controlling them through ongoing environmental audits and monitoring results.
- Open dialogue with the public and other interested parties, in addition to the active involvement of personnel from the organisations.
- Commitment to full transparency with society and other groups.

### **1.2 Environmental statement**

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, fuel, emissions, effluents, etc.
- The company's environmental policy, ensuring compliance with applicable regulations and a commitment to continuous improvement based on quantifiable objectives.
- Compliance with the applicable legal requirements.

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- Validation of the system audit and compliance with regulations carried out by an authorised certification agency.

In short, making our activities known to society, providing key data and ensuring that our company is environmentally compliant.

### **1.3 Registration of Befesa Aluminio S.L. (Valladolid) in the Scheme**

Taking into account that the facilities and the process of the former Befesa Escorias Salinas, S.A. are still complete, and that the activity of Befesa Aluminio, S.L. is extremely reduced following the definitive closure of the aluminium foundry in June 2012, and that the activities of one are complimentary to the other, the declaration made by the extinct Befesa Escorias Salinas, S.A. has been used as a basis for this environmental statement, which will be supplemented with information from the Environmental Authorisation for Befesa Aluminio, S.L. which is currently valid.

According to the Resolution of 17 December 2009, Directorate General of Environmental Prevention and Regional Planning of the Regional Ministry of the Environment Government of Castilla y León have registered Befesa Aluminio S.L. (Valladolid Work Centre) in the register of centres belonging to the Eco-Management and Audit Scheme (EMAS). Befesa Aluminio S.L. (Valladolid) performs its activities in an environmentally-friendly way.

Minimising the potential environmental effects and impacts that our company might generate, from receipt of the industrial waste through to storage and its subsequent treatment, is taken into consideration at all times. This has led Befesa Aluminio S.L. (Valladolid) to adhere to Regulation 1221/ 2009, even though it is voluntary.

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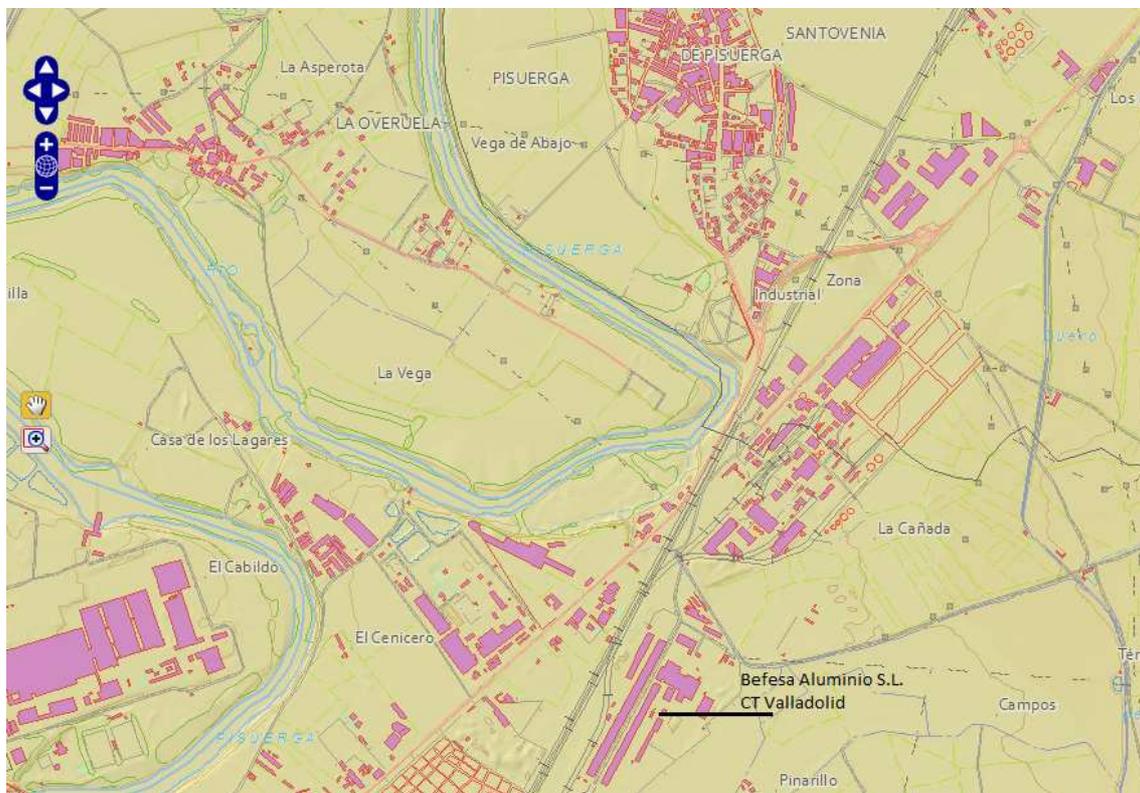
### **Befesa Aluminio (Valladolid).**

Adopting the regulation provides greater knowledge about the centre's various activities, improving control and minimising the potential environmental effects that could arise.

The regulation is an effective method of showing society the different ways in which Befesa Aluminio S.L. (Valladolid) is committed to the environment.

### 2. Location and site

Befesa Aluminio S.L. (Valladolid) is located in the municipality of Valladolid, around 5 km from Valladolid city centre on a site covering approximately 106,700 m<sup>2</sup> on land formerly used by Endesa. The closest residential centres to the facilities of Befesa Aluminio S.L. (Valladolid) are the district of San Pedro Regalado, also in the municipality of Valladolid, some 1,4 km away, and the village of Santovenia de Pisuerga, which is 1,9 km away.



2.1. Location map for Befesa Aluminio S.L. (Valladolid).

### 3. Activity description.

The industrial activity of Befesa Aluminio S.L (Valladolid), following the absorption of Befesa Escorias Salinas S.A. and unification of their activities, is the recycling, recovery and reuse of waste generated by primary and secondary aluminium production, which is divided into two processes described below:

**Process 1:** (wholly corresponds to the activity of the former Befesa Escorias Salinas S.A.).

The recycling process used by Befesa enables the free metal and salt fluxes to be recovered, as well as the formation of inert products, mainly aluminium oxide.

The production process consists of the mechanical crushing and separation of the metals, the reaction of the hazardous components and aqueous dissolution of the salts, filtration of the inertised material and the subsequent crystallisation of the salts.

The phases of the production process are the following:

**Crushing:** The purpose of this treatment is to extract the metal aluminium while also reducing the particles to an ideal size to ensure that hazardous components react in an optimum way and that the salts are correctly dissolved.

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It consists of breaking up large blocks using a hydraulic crusher before the pieces subsequently enter a mill with a maximum block size of 750 kg. Once the material has been crushed it passes through a screen from which a primary product is obtained (aluminium concentrate) and a material that is ideal for the next milling circuit. During this phase the material is reduced to a powder and aluminium concentrates with different granular sizes are obtained.

Dissolution-Reaction: the material (powder) obtained from the crushing and milling process is mixed with water to dissolve the salts. The dissolution process uses part of the condensates from the crystallisation process and the filtrate from the alumina concentrate.

The mixture is pumped into reactors in which the temperature is controlled to ensure the aluminium compounds react. The gases produced in the reactors are burnt off.

The mixture is sent to various settling tanks that will separate the oxides from the salt water by adding a flocculant. The reacted oxides are dried through filters and the filtrate waters are recirculated to be used again.

The dried residue obtained is sent to the end product warehouse. It is now called Paval and is used in ceramic and refractory products, rock wool, etc.

The brine obtained is treated in a clarifier before going on to the next stage.

Crystallisation: Evaporation and subsequent condensation is used to separate the salts from the water contained in the brine obtained from the previous phase. This produces a salt (a mixture of ClNa and ClK) and various condensates that are reused in the process.

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Natural gas powered boilers are used to produce steam.

Drying: Both the salt and the Paval can be dried in a rotating dryer that uses hot gases, if the end client requests it.

**Process 2:** (relates to the treatment and recovery of aluminium dross and scrap).

The recycling process used by Befesa enables the free metal to be recovered; the milling powders to be treated in Process 1; and segregation of the metals.

The phases of the production process are:

Scrap milling: the purpose of this treatment is to extract the metal aluminium from aluminium scrap, removing as much contamination as possible which could interfere with the subsequent smelting process.

Dross milling: the dross from the aluminium smelting furnaces is milled and screened in order to separate the metal aluminium (aluminium concentrates) from the oxides, which are treated in process 1 described above.

## **4. Integrated management system for health & safety, quality, environment and the GHG inventory.**

Our management system principally comprises the following:

- Integrated health & safety, quality, environment and GHG inventory policy, which formally describes the guidelines and commitments adopted by Befesa Aluminio S.L. (Valladolid). This policy is periodically reviewed depending on changes to the organisation, legislation, interested parties, etc.
- The policy was most recently reviewed and amended in January 2014.
- Management program that includes the activities that need to be performed to achieve the objectives.
- Integral graphical management scorecard, which monitors the activities of the management program.

Documentation of the management system, comprising:

- Management manual: It describes the company's responsibilities as well as the controls of the activities and all the parties involved that have or are likely to have an impact on the environment.
- Management procedures: They describe how the activities included in the management manual are implemented.
- Instructions and registers.
- Internal audits, as system tools for evaluating the performance and effectiveness of the implemented management system, and for identifying improvement opportunities.
- Review of the system by the management in order to evaluate its implementation and effectiveness, and to establish objectives to continuously improve environmental protection.

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- Evaluation of environmental aspects.
- Registers of the applicable legislation and legal requirements.
- GHG inventory.

Its main objectives are:

- Assume a commitment to comply with legal and other requirements that apply to the company or that it voluntarily subscribes to.
- Carry out our recycling activity in an environmentally-friendly way, with special emphasis on those products and activities that may pose a risk to the environment.
- Promote sustainable development.
- Continuous improvement from an environmental perspective.

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### **Policy**

As a leading company for the recycling, recovery and reuse of waste from the aluminium industry, Befesa Aluminio S.L. (Valladolid) focuses its activity on the pursuit of excellence through safe, efficient and effective management, contributing to sustainable development.

The management of Befesa Aluminio S.L. (Valladolid) understands that the complete satisfaction of all its stakeholders (clients, suppliers, shareholders, direct and indirect employees, society, etc.) is essential to its success and it therefore adopts the following policy to help implement its mission and vision:

Create value for stakeholders in a sustainable and sustained way, ensuring the company's continuity. Use the company's leadership position to achieve the best results for the company, its people and society.

Offer an integral service for treating waste from the aluminium industry, which complies with all legal requirements and any other commitment that the company makes, and ensures the satisfaction of the company's internal and external clients through the use of best available technologies and the appropriate resources.

Offer quality products and advisory services to our clients by developing new applications.

Promote sustainable development, minimising waste generation and atmospheric pollution, promoting savings of natural resources.

Promote greater awareness, understanding and contribution by all employees; correctly manage people to help them perform their job; strengthen their participation; ensure that know-how is correctly managed, and generate a safe and healthy working environment.

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## **Befesa Aluminio (Valladolid).**

Optimize all the company's activities through process management; ensure the health and safety of our employees and facilities; and work towards continuous improvement, establishing quantifiable objectives and regularly evaluating the results.

Establish effective communication channels that facilitate stable and long-lasting relationships, especially with our clients, stakeholders and suppliers.

The Befesa Aluminio S.L. (Valladolid) management team will maintain and interpret this policy as well as ensuring that it is understood and accepted by all the company's employees and subcontractors.

This policy will be made available to all stakeholders.

General Manager.

Valladolid, January 2014.

Carlos Ruiz de Veye

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### **Befesa Aluminio (Valladolid).**

In accordance with the requirements of the international ISO 14001:2004 standard, the general manager of Befesa Aluminio S.L. (Valladolid) has appointed the following person to apply and maintain the implemented environmental management system:

- Ruth Vasco López, head of health & safety, quality, environment and GHG inventory, as the management's representative, responsible for establishing, implementing and maintaining the management system, while ensuring compliance with all applicable environmental requirements.

It should be noted that the management of the health & safety, quality and environment systems and the GHG inventory have been integrated in order to streamline our efforts to achieve joint progress across all three areas, while at the same time maintaining the strict standards and diligence in these individual areas so as not to compromise the welfare of future generations.

It is also worth highlighting the emphasis that Befesa Aluminio S.L. (Valladolid) places on business excellence, adapting its management system to the EFQM excellence model. The company has also prepared a greenhouse gas inventory according to the ISO 14064 standard.

This inventory includes the sources of greenhouse gas emissions that are under the company's control; and those emissions derived from the generation of the electricity it acquires and consumes. The verification process for the ISO 14064 standard for 2013 was successfully completed during the first few months of 2014.

## **5. Summary of environmental objectives and challenges for 2013.**

Every year Befesa Aluminio S.L. (Valladolid), formerly Befesa Escorias Salinas S.A. (process 1), establishes a series of environmental objectives that are included in the annual management plan, which defines the goals associated with each objective as well as assigning the corresponding human and material resources. The environmental objectives defined for 2013 are described below (for process 1 only, since they are not defined for process 2), with a short summary of their degree of completion.

It should be noted that objectives will be set for both processes for 2014, once both their environmental aspects have been included, as subsequently explained in this document.

- a) A 1 % reduction in electricity consumption compared to 2012.

The amount of electricity consumed is expected to be reduced by improving the management of the stoppages carried out and reducing the installed capacity.

This objective could not be achieved despite the fact that consumption remained below target during the second part of the year, since this was insufficient to offset the excess consumption earlier in the year. In addition, the stoppage in December exacerbated consumption figures and the target was not achieved.

The planned reduction in installed capacity was not carried out which means that energy savings were not obtained.

A graph showing electricity consumption for 2012 and 2013 is shown below.

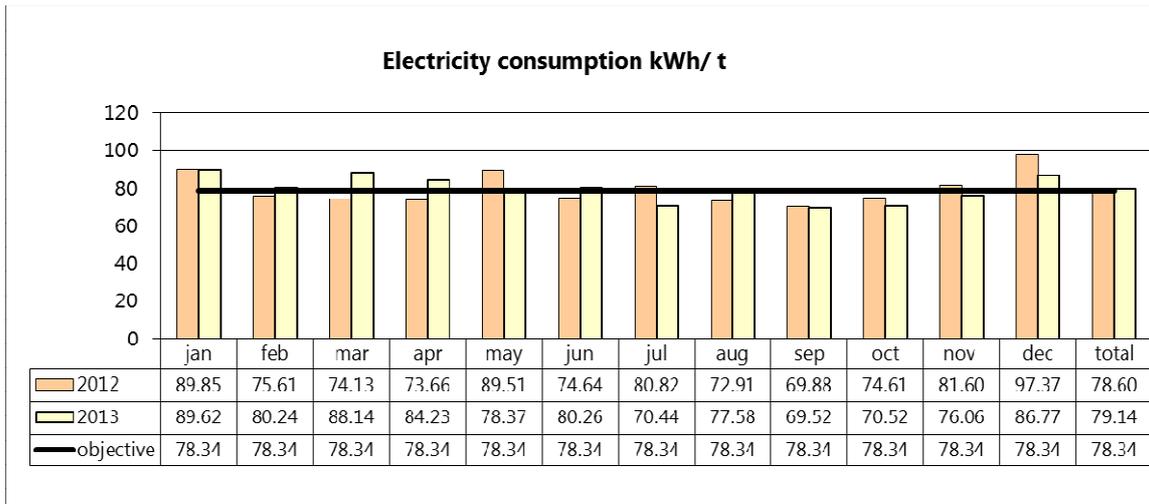


Table 5.1. Electricity consumption 2012 and 2013.

b) A 1 % reduction in water consumption compared to 2011.

The reduction in water consumption is an important milestone for Befesa Aluminio S.L. (Valladolid).

The optimisation of water circuits as well as the stoppages and start-ups were proposed as goals in order to achieve this objective.

The production department was primarily responsible for this objective and it has been achieved by implementing a new procedure that reflects its actual water requirements.

A graph showing water consumption for 2012 and 2013 is shown below.

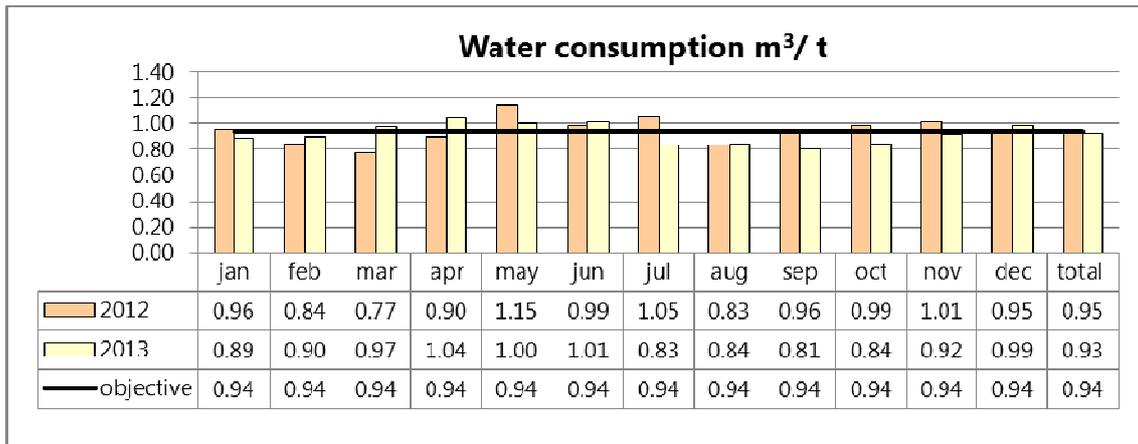


Table 5.2. Water consumption 2012 and 2013.

- c) A 1 % reduction in gas consumption compared to 2012.

The proposed goals to reduce gas consumption meant reducing the amount used by the boiler and trying to achieve greater densities.

The production department and the maintenance department were responsible for obtaining these goals.

The objective has been achieved through lower consumption, especially during the second part of the year.

Consumption from plant stoppages and start-ups has been lower than the previous year despite not having made the planned investment in the boiler, since this was offset by improved production management in the second half of the year.

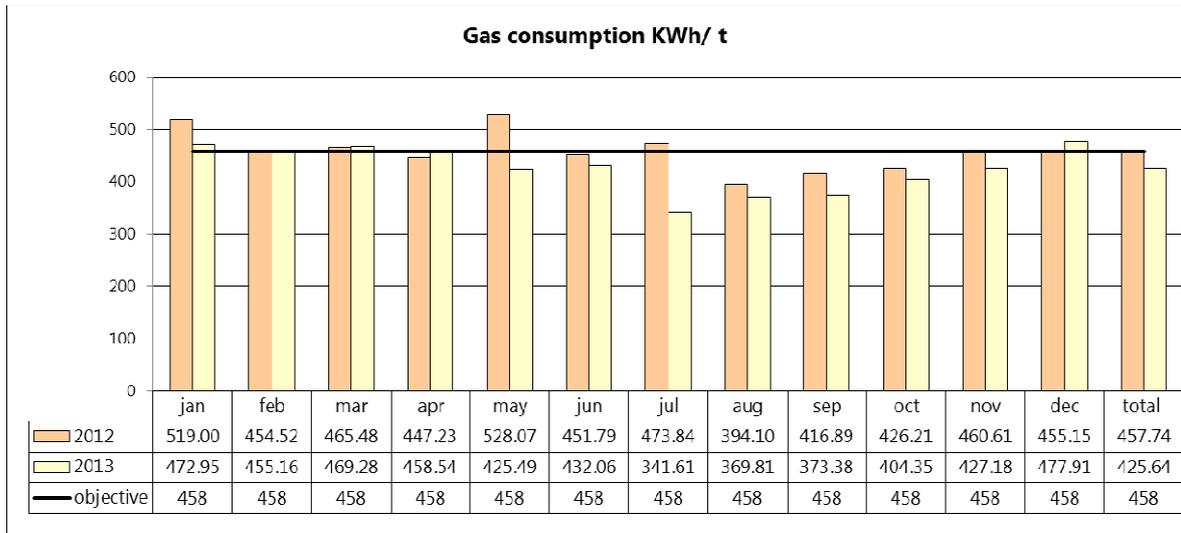


Table 5.3. Gas consumption 2012 and 2013.

d) Consolidation of the greenhouse gas inventory.

During 2013, and due to Befesa Aluminio S.L. (Valladolid) leaving the Abengoa group, the greenhouse gas inventory has been changed to exclude scope 3 emissions, which refer to other indirect emissions that result from the company’s activities.

The audit process was carried out at the start of 2014 with a satisfactory result, since the consolidation objective has been fully achieved.

e) A 1 % reduction in GHG emissions associated with transport compared to 2012.

This objective had to be omitted due to the change in the scopes of our inventory resulting from our exit from the Abengoa group.

## **6. Significant environmental aspects.**

An environmental review (diagnosis) was carried out based on the ISO 14001 standard and the GRI (Global Reporting Initiative) protocols of the G3.1 environment indicators in order to identify and evaluate environmental aspects.

Every element of the activities of Befesa Aluminio S.L. (Valladolid) that had the potential to generate some type of environmental impact (integrating both processes), whether positive or negative, has been included in this identification process.

The following list refers to these aspects:

- Materials
- Energy
- Emissions, discharges and waste
- Products and services
- Legal compliance
- Transport

The changes that each of these aspects could have on the environment are identified (environmental impacts).

The methodology used for the aforementioned evaluation has undergone important changes to improve its objectivity.

Under normal conditions, environmental aspects are assessed based on the three environmental parameters of quantity, duration and degree of hazardousness.

- Quantity: weight, volume, concentration or extent of the environmental aspect.
- Duration: permanence or the actual duration of the environmental aspect.

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- Hazardousness: property used to characterise a substance and/or waste, or the negative effect or repercussion that this aspect may have, which increases towards the legal limits or applicable reference levels.

Under abnormal or emergency conditions, environmental aspects are evaluated according to the environmental parameters of probability and environmental impact.

- Probability: Likelihood that the event will occur based on historical emergencies.
- Environmental impact: Intensity of the environmental impact as a result of an accident or emergency situation, associated with the protection measures at the facilities.

Once the aforementioned system has been applied to all the identified environmental aspects and a final score has been obtained, all those environmental aspects that obtain a score equal to or greater than seven are classified as significant, whether under normal or abnormal/ emergency conditions. In the event that fewer than three aspects obtain or exceed this score, then the three aspects with the highest scores are classified as significant.

The health & safety, quality, environment and GHG inventory department will propose new objectives and goals, or review existing targets, taking account of these significant environmental aspects, as well as any legal or other requirements applicable to the company, its technology options and the company's financial, operational and business requirements. It will also consider the opinions of interested parties, if applicable. Aspects with a positive impact are those that may have beneficial repercussions for the environment.

Indirect environmental aspects, meaning those that the company does not have full control over, are only assessed taking into account the environmental impact.

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The evaluation of all the environmental aspects of Befesa Aluminio S.L. (Valladolid) took place in January 2014.

**6.1. Significant direct environmental aspects and impacts under normal conditions**

After identifying and evaluating the direct environmental aspects under normal conditions for 2013, the following are classified as significant:

Ranking	Significant direct environmental aspects	Environmental impact	Total score
1	Night time noise	Acoustic pollution	10
2	Used big-bags	Soil contamination and depletion of resources	9.3
3	Groundwater consumption	Use and depletion of a natural resource	8
4	Septic tank discharge	Water pollution	7.3
5	Electricity consumption	Atmospheric pollution. Increase in greenhouse effect	7
6	Nitrogen consumption	Depletion of material resources	7
7	Volume of reused internal waste water (positive aspect)	Less contamination of surface water by reducing discharges	7

Table 6.1. Significant direct environmental aspects and impacts under normal conditions.

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### a) Night time noise.

Measurements of night time noise levels were taken during 2013 by an authorised control agency. The results of these measurements, which are still within the legal limits and are listed later in this document, have resulted in this environmental aspect being classified as “significant” for Befesa Aluminio S.L. (Valladolid).

### b) Used big bags.

Although the number of big bags used during 2013 has been reduced, this environmental aspect continues to be classified as “significant” for Befesa Aluminio S.L. (Valladolid) and alternatives are therefore being sought to lower the volume used.

### c) Groundwater consumption.

Water is an essential component in the processes carried out by Befesa Aluminio S.L. (Valladolid). Water consumption is therefore proportional to the consumption of raw materials. As explained above, the water is used for dissolving salts; it is evaporated in order to obtain ClNa and ClK through crystallisation; and it is subsequently condensed to be used in new production processes.

All the condensates produced during the evaporation phase are sent to the storage tanks used to supply water to the different consumption areas:

- Boilers for steam production.
- Oxide washing and/or dissolution phase.
- Pump seals and for cleaning pipes and plant. After being used in the seals, this water is also sent to the dissolution phase.

The process has been designed to reduce the use of new water inputs as much as possible, maximising the performance and recycling of the water generated during the

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process, and run-off water. The only fresh water that is added is used to compensate for water that is lost during the process.

The fresh water that is added comes from a groundwater source for which Befesa Aluminio S.L. (Valladolid) has the necessary administrative authorisations.

Befesa Aluminio S.L. (Valladolid) does not pre-treat this water.

#### d) Septic tank discharge.

Due to numerous problems over the last few years controlling the parameters in our IEA in relation to sludges from the septic tank, in 2013 the maintenance department established a new control that has stabilised the results and now complies with legislation. Nevertheless, this environmental aspect has once again been classified as significant this year as a means of controlling it.

#### e) Electricity consumption.

The second most important source of energy for Befesa Aluminio S.L. (Valladolid) is electricity, due to the amount of equipment, such as motors, used in the process. Targets are defined every year in order to reduce the amount of energy consumed, by changing equipment for new pieces that use less power.

#### f) Nitrogen consumption.

The Befesa Aluminio S.L. facilities in Valladolid have a nitrogen tank that is owned by the supplier. Nitrogen is used in the inertisation procedures of the reactors and for maintaining the seal on the flare.

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In 2013 more nitrogen was consumed than in previous years due to various problems at the plant and the need for stoppages and start-ups. This environmental aspect is therefore classified as significant.

- g) Volume of reused internal waste water.

The process has been designed to reduce the use of new water inputs as much as possible, maximising the performance and recycling of the water generated during the process, as well as run-off water. The only fresh water that is added is to compensate for water that is lost during the process, and we therefore consider this to be a significant positive environmental aspect since it decreases external water use and consumption of a scarce natural resource. It also helps to decrease surface water contamination by preventing and reducing discharges.

### 6.2 Significant direct environmental aspects and impacts under emergency conditions.

A new evaluation of the environmental aspects was made in January 2014. After identifying and evaluating the direct environmental aspects under emergency conditions, the following are classified as significant, for both processes:

Ranking	Significant environmental aspects	Environmental impact	Total score
1	Contamination of cooling towers and/or the air conditioning system by Legionella.	Contamination by Legionella.	6
2	Uncontrolled emissions and discharges in the event of a fire or explosion.	Increase in atmospheric pollution from combustion gases and increase in soil contamination.	6

3	Uncontrolled emissions and discharges due to failures in the treatment systems.	Water pollution from discharges.	4
4	Discharges and spills in the event of damage to tanks or leaks at the plant (storage tanks for fuel or chemical products).	Water pollution from discharges. Generation of waste.	4
5	Generation of asbestos cement.	Generation of hazardous waste.	4

Table 6.2 Significant direct environmental aspects and impacts under emergency conditions

The necessary preventive measures have been implemented in order to reduce the probability of these situations from occurring. The preventive measures established are specific for each type of emergency. They are as follows:

Type of emergency	Prevention measure implemented
Contamination by Legionella	<ul style="list-style-type: none"> <li>• Treatment, maintenance and control of the cooling towers and the A/ C system according to current legislation.</li> <li>• Detection and correction measures implemented.</li> </ul>
Fires	<ul style="list-style-type: none"> <li>• Creation of first response teams and emergency managers.</li> <li>• Network of fire detectors, extinguishers and alarms.</li> <li>• Improvement in the response capacity thanks to the target established in 2010.</li> </ul>
Explosions	<ul style="list-style-type: none"> <li>• Creation of first response teams and emergency managers with continuous training.</li> <li>• Application of the regulation on explosive atmospheres (ATEX).</li> </ul>
Spills	<ul style="list-style-type: none"> <li>• Creation of first response teams and emergency managers with continuous training.</li> </ul>

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	<ul style="list-style-type: none"><li>• Emergency equipment, including absorbent materials, distributed throughout plants.</li><li>• Water-proofing floors.</li></ul>
Failures in the gas treatment systems	<ul style="list-style-type: none"><li>• Creation of first response teams and emergency managers with continuous training.</li><li>• Regular reviews of plants.</li></ul>
Failures in the discharge treatment systems	<ul style="list-style-type: none"><li>• Daily automatic control of the correct functioning of the intake pumps.</li><li>• Water holding tanks always empty.</li></ul>

Table 6.3 Control measures.

In terms of mitigating the environmental impacts associated with emergencies, once the emergency situation is over, the management of Befesa Aluminio S.L. (Valladolid) will evaluate the situation, providing the necessary resources to mitigate the impacts associated with the corresponding emergencies as far as is reasonably possible.

Befesa Aluminio S.L. (Valladolid) has informed the Valladolid civil protection service of its emergency plan (self-protection plan), which covers all of its facilities, and which will be kept up-to-date and will be reviewed at least once every three years in accordance with RD 393/ 2009.

### **6.3 Significant indirect environmental aspects**

Indirect environmental aspects are those associated with the transport of people and goods. Neither of these areas is considered as significant.

The consumption of diesel oil and natural resources and the production of combustion gases are all considered to be impacts derived from indirect environmental aspects,

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such as the transport of goods, which are beyond the control of Befesa Aluminio S.L. (Valladolid). The main raw materials, such as salt slags, are transported in bulk in dump trucks. Befesa Aluminio S.L. (Valladolid) manages this transport and optimises routes so that lorries are not empty on the return journey. Furthermore, by controlling its contractors and suppliers, priority can be given to those transport companies that work with the environment, in other words, those that hold environmental certificates and have also implemented a greenhouse gas inventory.

Other indirect environmental aspects are those caused by contractors that carry out tasks at the plant, whose impacts are associated with the use of natural resources such as water, power or electricity.

In terms of staff transport, and as already mentioned in previous environmental statements, efforts are made to organise staff into shifts so that people that live in similar zones are grouped together (especially those that live a long way away) so that they can car-pool. The purpose of this measure is to try to reduce greenhouse gas emissions associated with staff transport to the plant.

## 7. Environmental objectives and challenges 2014.

A series of environmental objectives has been defined for 2013 to ensure Befesa Aluminio S.L. (Valladolid) fulfils its commitment to continuous improvement in every area, including the environmental aspects.

As in previous years, the objectives have been formulated based on studies by McKinsey in which the management systems extend to time horizons beyond the annual budget cycle.

The environmental objectives and their corresponding indicators for 2014 are as follows:

<b>Objective 1: Reduction of water consumption</b>		<b>Associated Indicator 1:</b> m <sup>3</sup> / t	<b>Annual target: 1 %</b> compared to 2013
	<b>Person responsible</b>	<b>Period</b>	<b>Assigned resources</b>
Goal 1: Optimise water circuits, rationalise water use and eliminate bad practices.	DM/ JR	June 2014	€ 6,000
Goal 2: Optimise stoppages/start-ups.	DM/ JR	Monthly	€ 300

<b>Objective 2: Reduction in electricity consumption.</b>		<b>Associated Indicator 1:</b> kWh/ t	<b>Annual target: 1 %</b> compared to 2013
	<b>Person responsible</b>	<b>Period</b>	<b>Assigned resources</b>
Goal 1: Rationalise the use of machinery, eliminate bad practices.	DM/ JR	Monthly	N/ A

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<b>Objective 3: Reduction in natural gas consumption.</b>		<b>Associated Indicator 1:</b> kWh/ t processed	<b>Annual target: 2%</b> compared to 2013
	<b>Person responsible</b>	<b>Period</b>	<b>Resources</b>
Goal 1: Work with high density.	DM/ JR	Monthly	N/ A
Goal 2: Optimise water use in crystallisation phase.	DM/ JR	Monthly	N/ A

## **8. Environmental performance 2013.**

The following section reflects the company's environmental performance.

All of the indicators shown below are represented by a figure A, expressed in the units corresponding to each case; a figure B, expressed as tonnes of total processed raw materials (taken from the data listed on page 57 of this statement), and a figure  $R=A/B$ , expressed in the corresponding units per tonne of total processed raw materials, always differentiating between process 1 and process 2.

### **8.1 Atmospheric emissions.**

Befesa Aluminio S.L. (Valladolid) currently has nine authorised monitoring points associated with the main facilities that form part of the production process:

#### **Process 1:**

- Point nº 1: Boiler B.
- Point nº 2: Boiler C .
- Point nº 3: Band filter extraction.
- Point nº 4: Flare pipe.
- Point nº 5: Milling sleeve filter extraction.
- Point nº 6: Extraction from drying sleeve filters.

Emissions from the boilers solely comprise gases from the combustion of natural gas. In point 3 (the vacuum band filters), steam is captured from washing the aluminium oxide cake.

The gases produced in the reactors are burnt off in the flare (point 4).

## **Befesa Aluminio (Valladolid).**

### **Process 2:**

- Point nº 3 (a): Dross milling.
- Point nº 5 (a): Milling of aluminium pieces.
- Point nº 6 (a): Furnace operations.

a) Atmospheric emissions.

According to the environmental factors related to atmospheric emissions described in both environmental authorisations, the parameters and frequency of emissions measurements are either annual or two-yearly.

For process 1, Befesa Aluminio S.L (Valladolid) has decided to take measurements over shorter timeframes and create an average from the results due to the environmental significance of some of the monitoring points.

For process 2, the frequencies defined in the Integrated Environmental Authorisation (IEA) are applied.

### **Process 1:**

Point 1 is currently out of service and these emissions are therefore controlled at point 2. Point 3 (band filter extraction) is controlled every four months due to the company's concerns about greenhouse gas emissions and it therefore easily exceeds the control frequency defined in the Environmental Authorisation.

With regards to point nº 4 (the flare), the IEA includes the emissions point but does not establish emissions limits because this point was previously controlled in the pipe, in other words, prior to the gases being burnt off. Therefore although this controlled annually, it is not included.

**Befesa Aluminio (Valladolid).**

All the inspection chimneys comply with Order of 18 October 1976 on the prevention and correction of pollution. The installation, availability and dimensions of the connections and accesses are appropriate for the measurements and samples taken. The results from the last inspection are fully within the limits of current legislation.

The average results of the emissions measurements taken during 2013 and their correlation with the total tonnes treated are shown below.

The emissions limits of the points established in the IEA are also shown below.

Point nº 2: Boiler

Parameter evaluated	2011	2012	2013	VLE <sup>(1)</sup>
CO mg/ Nm <sup>3</sup>	12	18	20	100
CO kg/ t	0.023	0.043	1.69*10 <sup>-1</sup>	N/ A
NO <sub>x</sub> mg/ Nm <sup>3</sup> as NO <sub>2</sub>	74	36	84	200
NO <sub>x</sub> kg/ t as NO <sub>2</sub>	0.111	0.079	7.24*10 <sup>-1</sup>	N/ A

Table 8.1. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 2: Boiler C.

<sup>(1)</sup>VLE: Emissions limit.

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Point nº 3: Band filter suction.

Parameter evaluated	2011	2012	2013	VLE
HCl mg/ Nm <sup>3</sup>	24	10	7	230
HCl kg/ t	0.040	0.015	1.25*10 <sup>-2</sup>	N/ A
NH <sub>3</sub> mg/ Nm <sup>3</sup>	23	6	8	40
NH <sub>3</sub> kg/ t	0.038	0.009	1.38*10 <sup>-2</sup>	N/ A

Table 8.2. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 3: Band filter extraction.

Point nº 5: Mill extraction.

Parameter evaluated	2011	2012	2013	VLE
Particles, (PM <sub>10</sub> ) mg/ Nm <sup>3</sup>	6	12	12	40
Particles, (PM <sub>10</sub> ) kg/ t	0.005	0.011	1.17*10 <sup>-2</sup>	N/ A

Table 8.3. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 5: Mill.

Point nº 6: Extraction from drying sleeve filters.

Parameter evaluated	2011	2012	2013	VLE
Particles, (PM <sub>10</sub> ) mg/ Nm <sup>3</sup>	-	11	10	40
Particles, (PM <sub>10</sub> ) kg/ t	-	0.060	1.59*10 <sup>-2</sup>	N/ A
CO mg/ Nm <sup>3</sup>	-	16	20	100
CO kg/ t	-	0.092	3.13*10 <sup>-2</sup>	N/ A
NO <sub>x</sub> mg/ Nm <sup>3</sup> as NO <sub>2</sub>	-	21	21	200
NO <sub>x</sub> kg/ t as NO <sub>2</sub>	-	0.121	3.34*10 <sup>-2</sup>	N/ A

Table 8.4. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 6: Dryer.

**Befesa Aluminio (Valladolid).**

The data included in the tables has been extracted from measurement reports carried out by the Cartif Foundation, accredited by ENAC.

The codes of these reports controls are as follows:

- IM-LAE-I-20006/ 13
- IM-LAE-I-20010/ 13
- IM-LAE-I-20019/ 13
- IM-LAE-I-20023/ 13

**Process 2:**

Point nº 3 (a): Dross milling.

Parameter evaluated	2011	2012	2013	VLE
Particles, (PM <sub>10</sub> ) mg/ Nm <sup>3</sup>	11	10	8	20
Particles, (PM <sub>10</sub> ) kg/ t	1.03*10 <sup>-2</sup>	7.23*10 <sup>-3</sup>	5.58*10 <sup>-3</sup>	N/ A

Table 8.5. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 3 (a): Dross milling.

Point nº 5 (a): Furnace.

Parameter evaluated	2011	2012	2013	VLE
Particles, (PM <sub>10</sub> ) mg/ Nm <sup>3</sup>	9	10	10	20
Particles, (PM <sub>10</sub> ) kg/ t	3.25*10 <sup>-4</sup>	3.96*10 <sup>-4</sup>	4.09*10 <sup>-4</sup>	N/ A

Table 8.6. Average annual results and relative values of pollutant content per total treated tonne from inspections for point nº 5 (a): Furnace.

**Befesa Aluminio (Valladolid).**

Point N° 6 (b): Milling of aluminium cuttings.

Parameter evaluated	2011	2012	2013	VLE
Particles, (PM <sub>10</sub> ) mg/ Nm <sup>3</sup>	5	14	7	20
Particles, (PM <sub>10</sub> ) kg/ t	3.48*10 <sup>-3</sup>	1.42*10 <sup>-1</sup>	4.84*10 <sup>-2</sup>	N/ A

Table 8.7. Average annual results and relative values of pollutant content per total treated tonne from inspections for point n° 6 (b): Mill.

The data included in the tables has been extracted from the measurement report IM-LAE-I-20021/ 13 prepared by the Cartif Foundation and accredited by ENAC.

A total of 3,176 kg (2.77 \* 10<sup>-2</sup> kg/ t treated) of PM<sup>10</sup> and 86,709.02 kg of NO<sub>2</sub> (7.56 \* 10<sup>-1</sup> kg/ t of treated material) were emitted during 2013 for process 1.

The value of these emissions for process 2 is 1,968.56 kg of PM<sup>10</sup> (5.44\* 10<sup>-2</sup> kg/ t treated).

In relation to annual greenhouse gas emissions (GHG), it is worth mentioning that Befesa Aluminio S.L. (Valladolid) has implemented a GHG inventory for process 1.

This inventory, based on the ISO 14064 standard, has changed, as already mentioned, due to the exit of Befesa from the Abengoa group, due to the exclusion of scope 3 emissions (other indirect emissions such as those from suppliers).

In 2013 direct emissions (scope 1) and indirect emissions from energy (scope 2) by Befesa Aluminio S.L (Valladolid) (solely from process 1) were 15,900.65 t CO<sub>2</sub> eq, or 0.138 t CO<sub>2</sub> eq per tonne of treated material. These figures were verified by Aenor once the GHG inventory report had been checked, as required by the ISO 14064 standard.

The annual emissions of each type of greenhouse gas are as follows:

**Befesa Aluminio (Valladolid).**

Greenhouse gas	Emissions (t of CO <sub>2</sub> equivalent)	t of CO <sub>2</sub> equivalent/ t processed
CO <sub>2</sub>	13,245.18	1.15*10 <sup>-1</sup>
CH <sub>4</sub>	7.24	6.31*10 <sup>-5</sup>
N <sub>2</sub> O	65.10	5.67*10 <sup>-4</sup>
HFC	0	0
SF <sub>6</sub>	0	0

Table 8.8. Total Greenhouse Gas Emissions.

b) Measures implemented to prevent, reduce and control atmospheric emissions.

Befesa Aluminio S.L. (Valladolid) has defined a series of procedures that implement measures to prevent, reduce and control atmospheric emissions and include the protocol for taking actions under abnormal operating situations due to leaks, operational failures and any type of emergency that could occur at the plant, thanks to its integrated management system:

- Identification, evaluation and updating of environmental aspects (PG-01).
- Monitoring and measurement of operations (PG-05).
- Operational control (PG-06).
- Prevention and control of environmental emergency situations (PG-04).
- Self-protection plan (PG-29).
- GHG inventory (PG-41).

Furthermore, throughout its history the company has also implemented a series of measures designed to reduce the polluting content of its emissions. Those implemented in the last three years are included in the following table:

Measure implemented	Objectives	Year
Increase reviews of milling suction tubes and supervision of filter sleeves, cleaning of gas-suction tubes in the dissolution-reaction zone and cleaning the flare.	Reduction of emissions and energy savings.	2011
Enclosing the liquid decanting chambers.	Reduction of ammonia emissions.	2012
Dust suction on belt 9.	Reduction of dust emissions.	2012
Change of suction filter sleeves in mill.	Reduction of dust emissions.	2012
Dust suction on belt 6.	Reduction of dust emissions.	2013
Cleaning of reaction and decanting suction pipes.	Reduction of dust emissions.	2013
Change of suction filter sleeves in mill.	Reduction of dust emissions.	2012

Table 8.9. Measures implemented to prevent, reduce and control atmospheric emissions.

## 8.2 Noise.

The noise and vibrations that are emitted are directly caused by the production centre's activities due to moving machinery and lorries.

- a) Atmospheric noise emissions.

Both processes have been included in the evaluation of atmospheric noise emissions, in other words the Befesa Aluminio S.A. process and the Befesa Escorias Salinas S.L. process, taking current legislation and the emissions limits established in the IEA for Befesa Escorias Salinas S.A., which establishes the following noise limits, as a reference:

- Night time noise: 55  $L_{a_{eq}}$  dB (A).
- Day time noise: 65  $L_{a_{eq}}$  dB (A).

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### **Befesa Aluminio (Valladolid).**

As stated in the IEA, the main sources of noise pollution are:

- Milling waste.
- Moving machinery.
- Vehicular traffic.
- Auxiliary equipment: transformers, compressors, extractors.

This document establishes the maximum noise levels according to the regulation issued by Valladolid City Council on protecting the environment against noise and vibration emissions. It also requires a technical report that accredits compliance with this regulation to be submitted every four years.

Law 5/ 2009 of 4 June 2009 of Castilla y León on noise is also taken into consideration. Article 13 of this law establishes that in the event of making corrections due to the presence of low-frequency emerging tonal components or impulse-type noise, the limits will be 5 dB(A) greater than the value listed in Annex I.

The limit would therefore increase from 65 to 70 dBA during the day time and from 55 to 60 dBA at night time.

As stated in our environmental statement last year, Befesa Escorias Salinas S.A. failed to comply with the reference values for some of the night time measurement points established in the Integrated Environmental Authorisation.

As mentioned in previous statements, noise pollution measurements were taken in October 2008 by an authorised control agency, which concluded that Befesa Escorias Salinas S.A. complied with the noise levels established in current legislation, at night time and during the day.

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In 2012, based on the values established in its IEA, Befesa Escorias Salinas S.A. failed to comply with points 2, 3 and 4 at night time.

These breaches, as well as the corrective measures applied, were reported to the Department of the Environmental Evaluation and Liability Service of the Directorate General of Quality and Environmental Sustainability. This environmental aspect was also classified as significant and targets were set for 2013 in order to correct these irregularities.

During 2013 corrective measures were put in place and a new noise study was carried out, increasing the number of measurement points due to the merger of these activities. The study was carried out by an authorised control agency with the following results:

Date 26/09/2013	Point 1 dB	Point 2 dB	Point 3 dB	Point 4 dB	Point 5 dB	Point 6 dB
Day time	65.3	59.3	52.4	54.9	50.1	56.4
Night time	56.4	57.1	53.8	55.2	56.2	58.6

Table 8.10. Noise measurement results 2013 (\*)

As the above table shows, the corrective measures implemented during 2013 have been satisfactory since all the results are now within the legal limits.

### 8.3 Discharges into water.

Befesa Aluminio (Valladolid) has two different authorisations, one for each process.

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Process 1: There is no discharge point into a water course since all of the industrial water from production processes, as well as rain water and run-off water, feeds into a single point from which it is pumped back into the process.

Separate from the process, we hold an authorisation from the Duero water authority to discharge sanitation water into the ground once it has been treated. These discharges are classified as urban.

Process 2: The company discharges its water directly into the river Pisuerga via the storm drain of the Duero canal.

This discharge must only be clean rainwater, in other words it may not contain significant quantities of any pollutant.

a) Water quality.

Analyses of the discharges must be regularly reported to the Duero Water Authority, in terms of the volume and composition of the effluent, at least once a year for both processes. The analysis must be performed by a collaborating institution, pursuant to Article 253 of the Regulation of the Public Water Domain. The results of the analyses performed for both processes were:

**Befesa Aluminio (Valladolid).**

Process 1:

Parameter	2011	2012	2013	IEA limit
DBO <sub>5</sub>	291	55	40	60 mg O <sub>2</sub> / L
DQO	637	162	118	200 mg O <sub>2</sub> / L
Solids in suspension	42.5	20.5	29	90 mg/ L

Table 8.11. Annual results of the quality of the discharge and the reference values.

As the above table shows, the results obtained last year are within the parameters defined in our IEA.

However, this environmental aspect is once again classified as significant due to the numerous problems experienced in previous years in complying with the limits established for process 1.

A series of corrective measures have been implemented during 2013 such as manually cleaning the septic tank.

In addition to the aforementioned treatment system, the company has adopted other measures in the past. The following table lists those actions carried out in the last three years.

Measure implemented	Objectives	Year
Modification of the second septic tank with a trap.	Prevent waste water from overflowing	2010
Waste water treatment by adding new products.	Ensure the levels required by the IEA.	2011
Cleaning of the septic tank.	Ensure the levels required by the IEA.	2011
Manual cleaning of the septic tank.	Ensure the levels required by the IEA.	2012
Informing and training employees.	Ensure the levels required by the IEA.	2012
Manual cleaning of the septic tank.	Ensure the levels required by the IEA.	2013

Table 8.12. Measures implemented to prevent, reduce and control discharges.

Process 2:

Parameter	2011	2012	2013	IEA limit
Ph	7.49	7.42	7.08 ± 0.33	6-9
Aluminium	0.029	0.0401 ± 0.006	0.238 ± 0.060	0.5 mg/ L
Solids in suspension	< 5	6.4 ± 1.2	< 5	35 mg O <sub>2</sub> / L
DQO	64	< 50	< 50	125 mg O <sub>2</sub> / L

Table 8.13. Measures implemented to prevent, reduce and control discharges.

As Table 8.13 shows, all of the results obtained are within the parameters of our IEA.

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In addition, Befesa Aluminio S.L. (Valladolid) has implemented a series of procedures that use measures to prevent, reduce and control discharges and includes the protocol for acting in irregular operating situations due to leaks, operating failures and any other type of emergency that could occur at the plant:

- Identification, evaluation and updating of environmental aspects (PG-01).
- Monitoring and measurement of operations (PG-05).
- Operational control (PG-06).
- Self-protection plan (PG-29).

### 8.4 Generation of waste.

For the purposes of Law 10/ 1998 of 21 April on waste, and Royal Decree 833/ 1988 of 20 July, which approves the implementing regulation of Basic Law 20/ 1986 on toxic and hazardous waste, the plant is classified as a Hazardous Waste Producer, with the following authorisation numbers.

- Producer number PCL A-04066411/ VA for the facilities of process 1 (previously Befesa Escorias Salinas).
- Producer number PCL A47056858/ VA for the facilities of process 2 (previously Befesa Aluminio).

Process 1:

Hazardous wastes:

Hazardous waste	2011	2012	2013
Used oil (t) and (t/ t)	3.1	-	1.2
	$2.505 \cdot 10^{-5}$	-	$1.045 \cdot 10^{-5}$
Absorbent material (t) and (t/ t)	0.205	0.12	0.046
	$1.657 \cdot 10^{-6}$	$9.111 \cdot 10^{-7}$	$4 \cdot 10^{-7}$

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Chemical products (t) and (t/ t)	-	0.045	0.052
	-	$3.447 * 10^{-7}$	$4.5 * 10^{-7}$
Packaging of chemical products (t) and (t/ t)	-	-	-
	-	-	-
Metallic packaging (t) and (t/ t)	0.140	0.125	0.890
	$1.131 * 10^{-6}$	$9.572 * 10^{-7}$	$7.756 * 10^{-6}$
Used light bulbs (t) and (t/ t)	0.075	0.030	0.025
	$6.062 * 10^{-7}$	$2.297 * 10^{-7}$	$2.2 * 10^{-7}$
Big bags (t) and (t/ t)	22.760	29.06	18.84
	0.001	$2.222 * 10^{-4}$	$1.642 * 10^{-4}$

Table 8.14. Hazardous waste generated and waste generated per tonne of treated material.

### Non-hazardous wastes:

The non-hazardous industrial wastes produced at the plant primarily result from repairs, renovation or improvement works that comply with the aforementioned definition. The evolution of non-hazardous wastes generated in the last three years is shown below:

Non-hazardous waste	2011	2012	2013
Municipal solid waste (t) and (t/ t)	16	10	23.42
	0.001	$7.658 * 10^{-5}$	$2.0412 * 10^{-4}$
Used paper (t) and (t/ t)	2	2	5.4
	$1.616 * 10^{-5}$	$1.531 * 10^{-5}$	$4.706 * 10^{-5}$
Wood (t) and (t/ t)	-	5	2.5
	-	$3.829 * 10^{-5}$	$2.179 * 10^{-5}$
Plastics (t) and (t/ t)	-	4	1.7
	-	$3.063 * 10^{-5}$	$1.482 * 10^{-5}$
Rubber (t) and (t/ t)	-	6	7

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	-	$4.594 \times 10^{-5}$	$6.100 \times 10^{-5}$
Sludge from septic tank (t) and (t/ t)	6	9	6.66
	$4.844 \times 10^{-5}$	$6.984 \times 10^{-5}$	$5.805 \times 10^{-5}$
Scrap metal (t) and (t/ t)	822	772	992.614
	0.007	0.005	$8.65 \times 10^{-3}$

Table 8.15. Non-hazardous waste generated per tonne of treated material.

Process 2:

Hazardous wastes:

Hazardous waste	2013
Milling dust (t) and (t/ t)	1,546.650
	$4.272 \times 10^{-2}$
Used waxes and grease (t) and (t/ t)	0.182
	$5.03 \times 10^{-6}$
Used oils (t) and (t/ t)	0.4
	$1.105 \times 10^{-5}$
Packaging of chemical products (t) and (t/ t)	0.277
	$7.65 \times 10^{-6}$
Absorbent material (t) and (t/ t)	0.012
	$3.3 \times 10^{-7}$
Oil filters (t) and (t/ t)	0.04
	$1.1 \times 10^{-6}$
Lead batteries (t) and (t/ t)	0.041
	$1.13 \times 10^{-6}$
Fluorescent tubes	0.002
	$6 \times 10^{-8}$

Table 8.16. Hazardous waste generated and waste generated per tonne of treated material.

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Non-hazardous wastes:

Non-hazardous waste	2013
Ferrous scrap (t) and (t/ t)	854.220
	$2.4 \cdot 10^{-2}$
Non-ferrous scrap (t) and (t/ t)	124.440
	$3 \cdot 10^{-3}$

Table 8.17. Non-hazardous waste generated per tonne of treated material.

All the waste produced is sent to authorise waste managers to be treated and/or eliminated, so that any potentially recyclable or recoverable waste is used for these purposes, avoiding its destruction whenever possible.

The most significant waste generated at the Befesa Aluminio S.L. (Valladolid) plant, in terms of overall volume, are the big-bags used to transport filter dusts, aluminium dross and SPLs that are sent to our plant as raw materials, as well as the wastes produced in our milling process and from modifying the facilities, which in this case has resulted in fully recyclable scrap.

The amount of waste generated by these concepts is directly linked to the company's production process so that the annual amount generated directly depends on how much of this type of material is treated.

Procedure PG-14 relates to the management of waste within the general quality and environment procedures according to the ISO 14001:2004 certification. This procedure details and specifies the wastes (hazardous or non-hazardous), their segregation and storage procedure, and how they should be transported to the facilities of the waste management company. It also specifies the documentary control and the environmental records that are generated, which are primarily as follows:

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- Request to the management company to accept the waste.
- Acceptance documents for the waste from the authorised management company.
- Duly completed control and follow-up documents.
- Copy of the administrative authorisation of the waste management company.
- Copy of the administrative authorisation of the waste transport company.
- Register of waste produced.

The most important measures implemented during the last three years to prevent, reduce and control waste are:

Measure implemented	Objectives	Year
Study into declassifying big-bags as a hazardous waste.	Reduce the generation of this type of waste	2011
Training and informing all Befesa Escorias Salinas personnel about waste management.	Improve waste segregation.	2012
Waste management using segregation.	Improve best environmental practices.	2012
Integration of the waste management of the two plants.	Improve waste management.	2013

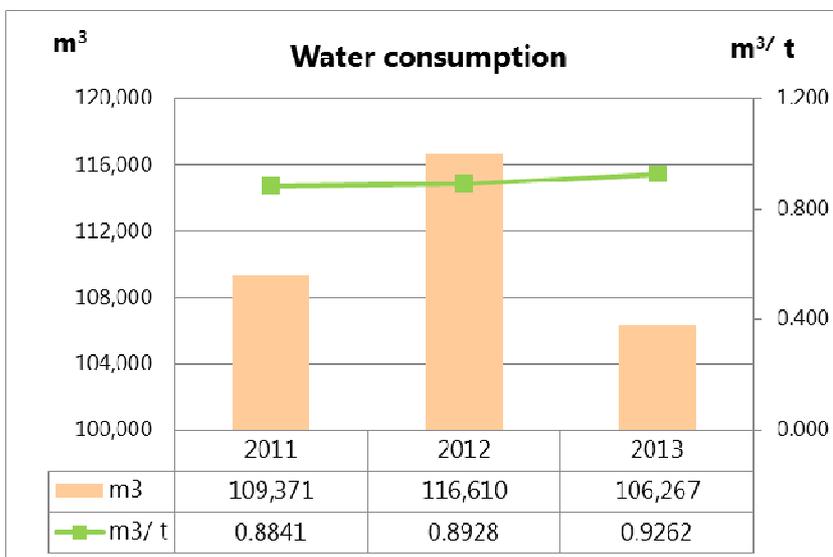
Table 8.18. Measures implemented to prevent, reduce and control the waste generated.

A new waste minimisation plan will be issued in 2014, as the previous version was created in 2010 as required by the IEA.

### 8.5 Water consumption.

Water is a fundamental part of the process at Befesa Aluminio S.L. (Valladolid), as already explained. Water consumption is therefore proportional to the consumption of raw materials. The consumption of water for the last three years expressed as total m<sup>3</sup> and per tonne of total processed raw material is shown below.

Process 1:



8.19. Water consumption for the last three years.

As shown, the company has complied with the legal limit every year, set at 119,300 m<sup>3</sup> annually by the Duero Water Authority.

Process 2:

Total water consumption by the remaining facilities of Befesa Aluminio was 56,226 m<sup>3</sup> during 2013.

As shown, the company has complied with the legal limit, set at 580,000 m<sup>3</sup> annually by the Duero water authority, every year.

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As mentioned in the section on objectives, the reduction in water consumption is due to the implementation of a new procedure in which we have made changes that reflect real production requirements, with fewer stoppages and greater operational efficiency.

### **8.6 Energy consumption.**

Natural gas is the main type of fuel used by Befesa Aluminio S.L. (Valladolid) and is used in the boilers that generate steam, the rotary dryer and the pilot lights.

Electricity is used to power the pump motors, milling machines, conveyor belts, ventilators, etc. as well as for controlling the whole plant.

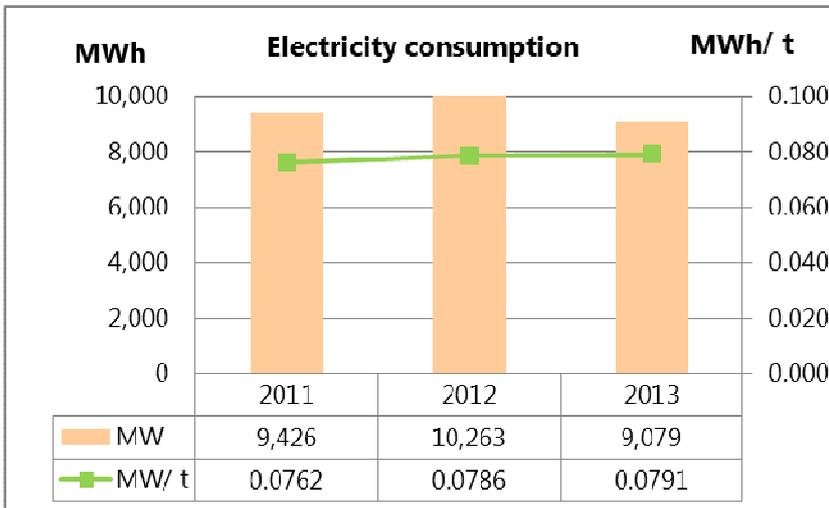
Diesel is only used for internal transport (loaders and fork lifts) and is not used in the production process.

Befesa Aluminio S.L. (Valladolid) has a nitrogen tank that is owned by the supplier. Nitrogen is used in the inertisation procedures of the reactors and for maintaining the seal on the flare. The storage tank is located in a fenced-off zone outside. Total consumption during the last year was 53.48 t equivalent to 0.46 kg/ t treated .

The average annual consumption (from January to December, inclusive) of energy in the last three years per processed tonne is shown below.

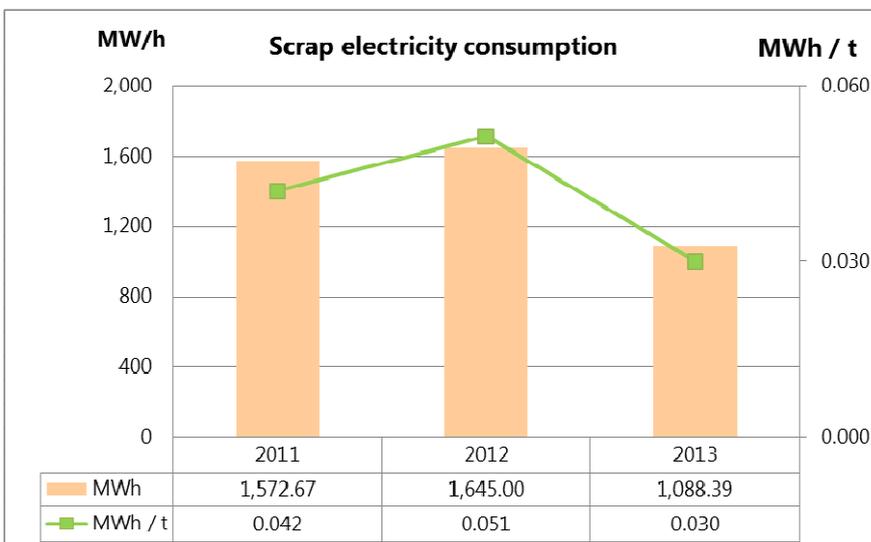
## Befesa Aluminio (Valladolid).

Electricity consumption for process 1:

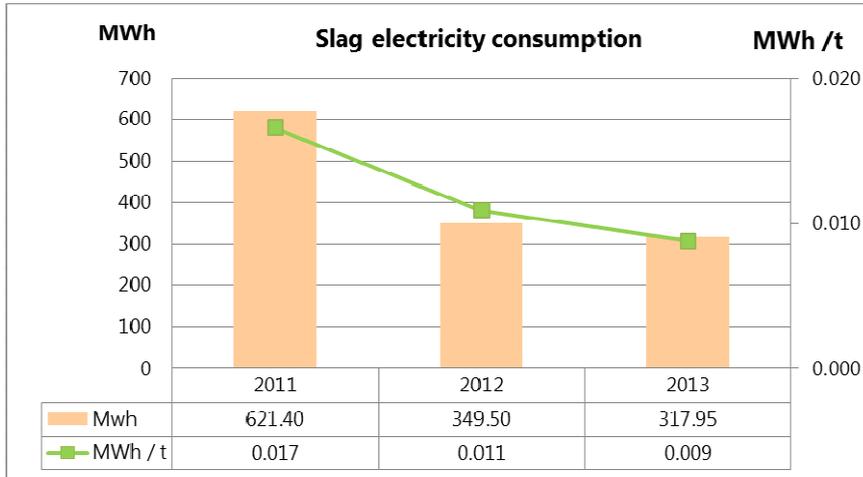


8.20. Electricity consumption for process 1 in the last three years.

The energy consumed by the remaining facilities for process 2 has been quantified and the data for the last three years is shown below.



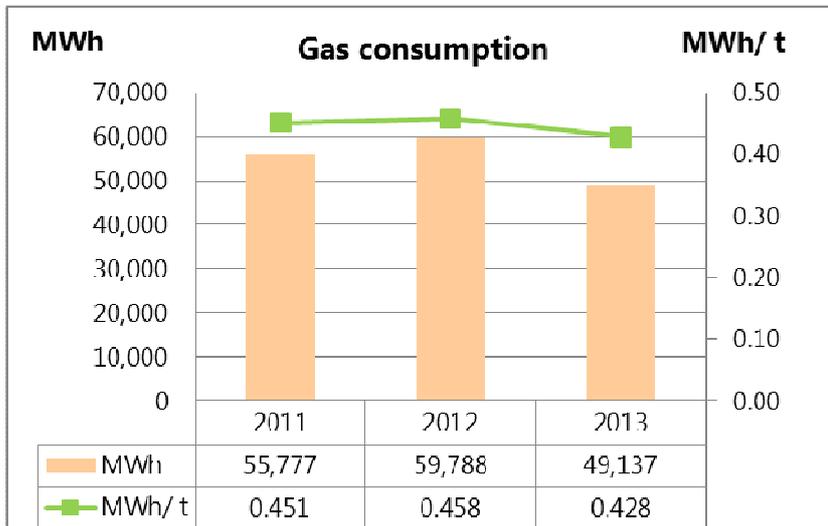
## Befesa Aluminio (Valladolid).



8.21. Electricity consumption for process 2 in the last three years.

As the graph shows, electricity consumption has fallen in absolute terms since the activity is different, but not in relative terms.

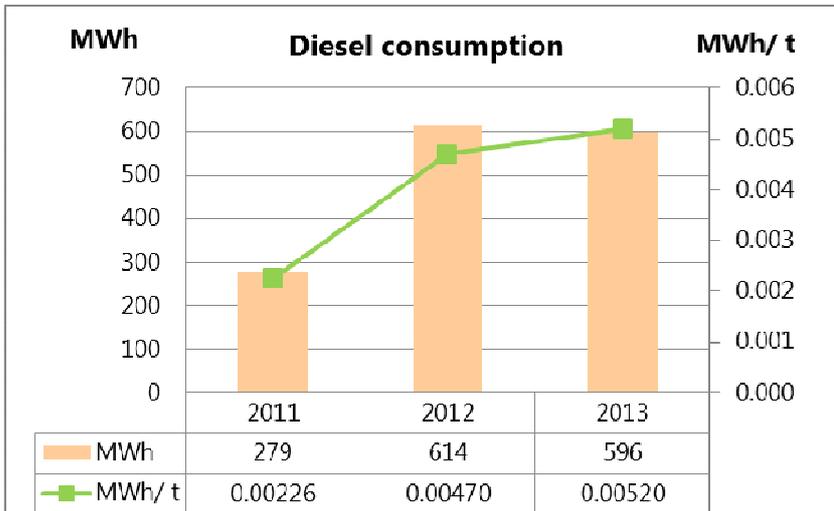
Gas consumption by process 1 has fallen in absolute and relative terms as a result of good production management.



8.22. Gas consumption of process 1 for the last three years.

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The only gas used in process 2 is in the small furnace used for smelting tests. The gas consumed by this furnace is included in the gas bill for process 1, which means that the figure for gas consumption per tonne processed cannot be calculated.



8.23. Diesel consumption of process 1 for the last three years.

Diesel consumption for process 1 has increased in relative terms as shown in the graph.

With regards to process 2, no annual comparison can be made for diesel consumption since there has been a change in activity.

The corresponding comparison will be made when this data is available in the future.

In process 2 during 2013, the remaining facilities used 558.88 MW/ h, which in relative terms is equivalent to 0.0154 MWh/ t milled.

The conversion from L to MWh has been made using the LHV (lower heating value) of the diesel, obtaining the value of 9.98 MW from the corresponding page of Petromercado (information about the oil sector).

Befesa Aluminio S.L. (Valladolid) sets targets to decrease its consumption every year, which helps us to systematically improve our use of these resources year-on-year.

**8.7. Treatment of raw materials.**

Annual consumption, from January to December inclusive, of these raw materials (expressed in tonnes) in the last few years is as follows:

Treated material	LER code	2011	2012	2013
Salt slags (Process 1)	100.308	110,366	107,811	96,149
SPL (Process 1)	161.101	2,846	10,360	7,369
Aluminium dross (Process 1)	100.322	5,942	3,790	2,128
Aluminium dross (Process 1)	100.321			
Filter dust (Process 1)	100.319	906	921	1,025
Foundry sand (Process 1)	101.106	3,653	7,697	8,064
Aluminium scrap	Miscellaneous	15,175	18,736	18,063
Slag scrap	Miscellaneous	21,679	15,174	18,145

8.24. Tonnes of raw materials processed by BAV, from January to December, during the last three years.

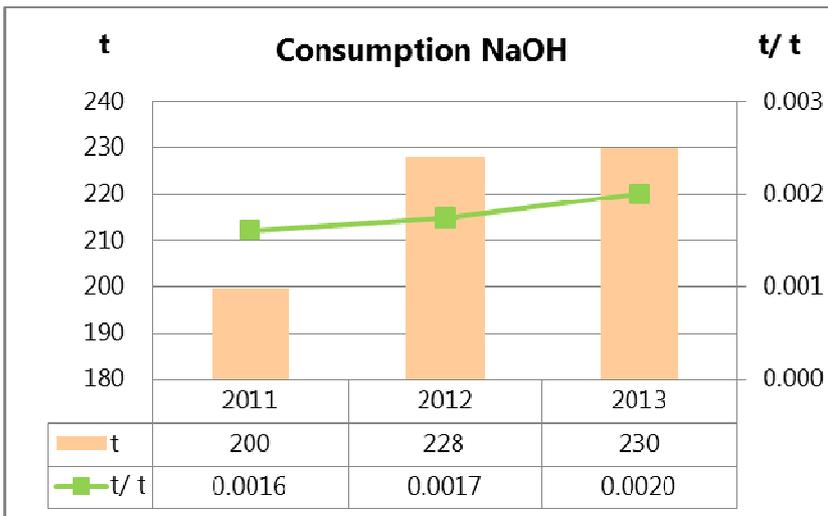
**8.8 Consumption of additives.**

In addition to the aforementioned raw materials, Befesa Aluminio S.L. (Valladolid) also uses additives, such as the following chemical products:

- NaOH: Used to maintain a basic pH in the brine, lowering the co-crystallisation point of the alumina.
- Flocculant: Used in the reaction-decanting process to help separate the solid-liquid interphase.
- Saline anti-foaming agent: Used in the salt crystallisation process to reduce foam formation.

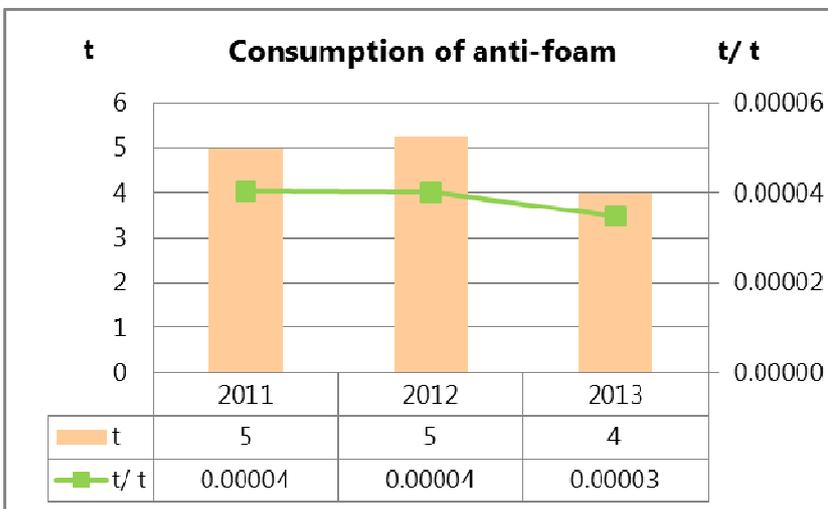
Average annual consumption (from January to December, inclusive) per tonne of total processed raw materials in the last three years is:

## Befesa Aluminio (Valladolid).



8.25. NaOH consumption for the last three years.

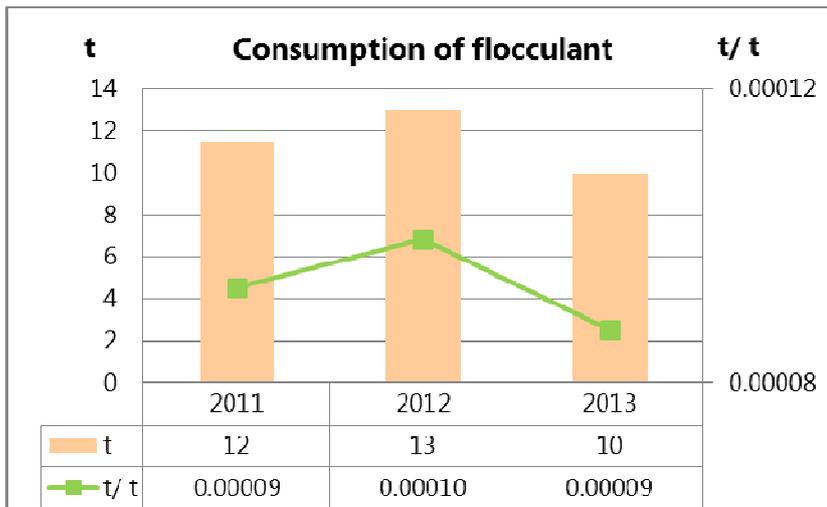
The increase in NaOH consumption is primarily due to manual dosing of this product because the tank had to be scrapped in 2012 when it was found to be legally non-compliant.



8.26. Consumption of anti-foaming agent for the last three years.

The consumption of anti-foaming agent and flocculent decreased by optimising their use in the plant.

## Befesa Aluminio (Valladolid).



8.27. Flocculent consumption of for the last three years.

### 8.9 Biodiversity.

The constructed floor areas at Befesa Aluminio S.L. (Valladolid) are shown below.

Building	Planned use	Useable floor area (m <sup>2</sup> )
Warehouse 1	Process, warehouse for raw materials and end products.	7,350
Warehouse 2	Building for compressors and cooling units.	83.87
Warehouse 3	Garage for vehicle fleet, spare parts storage, workshops, offices and changing rooms.	2,250
Warehouse 4	Treatment of aluminium scrap.	1,263
Warehouse 5	Milling of dross, warehouse for raw materials and end products.	11,395
Warehouse 6	Aluminium production warehouse. Its equipment is currently being dismantled.	4,307
Warehouse 7	Former electricity substation and disused workshops.	2,809

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### Befesa Aluminio (Valladolid).

R&D	Research laboratory	826
Building 1	Offices and changing rooms	1,916
Building 2	Offices and laboratory.	187.5

Table 8.28. Constructed floor areas in m<sup>2</sup>.

Our facilities occupy a total area of 106,700 m<sup>2</sup>. However, there has been no impact on biodiversity since land is not included and the plant is not close enough for any environmental incident to affect any protected area.

In 2013, the relative land area refers to total tons generated since the process has been unified.

Land	2011	2012	2013
Relative land use (m <sup>2</sup> / t)	0.079	0.075	0.7069

Table 8.29. Relative land use.

## **9. Corporate social responsibility.**

Befesa believes that corporate social responsibility is a strategic factor and treats it as one of the fundamental pillars of its current and future strategy. The company therefore seeks to incorporate corporate social responsibility values into its daily running and although it is not a requirement of the EMAS regulation, these values form an intrinsic part of its strategy, culture and organisation through all of its management systems.

a) Mission, vision and values.

Mission:

Befesa focuses on providing environmental services to industry through aluminium waste recycling, steel and galvanisation waste recycling and industrial waste management activities.

Vision:

Befesa provides industrial waste management solutions with special emphasis on its social responsibility to help create a sustainable world.

Values:

Befesa bases its management on the following values:

- Integrity.
- Legality.
- Professional diligence.
- Confidentiality.
- Service quality.
- Transparency.

b) Dialogue with our stakeholders.

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### **Befesa Aluminio (Valladolid).**

- Internal communication.

Communication is the key to involving the people that make up the company in achieving its mission, objectives and client focus. The following are some of the most important resources for the communication function:

Employee portal. Abengoa's portal was launched in 2003 and is used internally to quickly and universally disseminate all the information and knowledge about the business groups, companies and people that make up the organisation.

The portal is an internal communications and information tool. Its purpose is to be a professional desktop for all employees from which they can access all the necessary management systems for their work and the different human resources processes related to management and personnel, as well as providing all the static and dynamic information about the business groups and companies.

This portal has been active until halfway through the year, until Befesa ceased to be part of Abengoa.

Various alternatives to replace this portal are currently being studied.

Welcome manual: Befesa Aluminio S.L. (Valladolid) provides new employees and interns with welcome and integration plans in order to make them feel at home; to help them adapt; and to give them an overview of the company, its risks and its environmental management.

Furthermore, Abengoa's internal magazine includes the main actions being taken by its business groups and companies, as well as technical articles, news about quality and environmental issues, and articles about human resources. The magazine relies on information from employees and is published in Spanish and English with a circulation of 15,000 copies. This internal publication is also available to every employee via the employee portal and the corporate website.

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The Problem Resolution Report and Improvement Action corporate tools are used by employees to report potential deficiencies and to make suggestions either online or in paper format. These actions are monitored on a monthly basis at the committee meetings held with the company's senior management.

People Center. This can be accessed via the employee portal and offers the following functions:

- View and print payslips.
  - View the calendar of working days.
  - Modification of bank and personal details.
  - Option to distribute salary payments across several bank accounts (by a percentage or fixed amount).
  - View personal income tax returns, issue certificates, with an option to increase the legal rate.
  - Enquiry and FAQ service for all areas.
  - Possibility to request salary advances.
  - Enquiry service and management of personal issues relating to labour relations.
- External communications.

Befesa's website.

Befesa's website ([www.befesa.com](http://www.befesa.com)) was designed in 2003 and has been continuously updated since then in order to reflect the group's new activities, as well as the latest design and browsing techniques. It has a series of sections to offer all of the information required by its clients, investors and suppliers, as well as providing general information for anyone interested in knowing more about the company's activities. Users can use the useful links section to access web pages of Abengoa's other business groups. Befesa's website also enables the company to respond to people that request information via e-mail.

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## **Befesa Aluminio (Valladolid).**

- Befesa and its clients .

Befesa is committed to ensuring that its products and services always achieve maximum client satisfaction. The effective implementation of its management systems is the result of the guidelines established by the company's management in the policy on health & safety, quality, environment and the GHG inventory; the annual targets set and continuously monitored; continuous improvement; and the training and unconditional support of every member of the Befesa team. The senior management team is responsible for the smooth running of the management systems in each of the companies, delegating this role to the health & safety, quality, environment and GHG inventory department, which ultimately ensures compliance with all applicable regulations, procedures and legislation in each case. Befesa has a process management system that supports and implements the company's policy and strategy, focused on continuous improvement in line with the requirements of international standards. No incidents have been recorded via Befesa's reporting channels in relation to health and safety impacts of products and services during their life cycle caused by breaches of regulations or voluntary codes.

- Befesa and its suppliers.

**10.** Given the importance of suppliers to the organisation and its ability to successfully achieve its objectives, detailed studies are carried out both before and during any relationship with them to ensure that they comply with legal, commercial, logistical, health & safety, quality, environmental, GHG inventory, technical and aftersales service requirements. Befesa Aluminio S.L. (Valladolid) has standardised supplier selection processes and mechanisms for controlling and monitoring its suppliers. Supplier agreements are formalised through the necessary documentation containing the undertakings agreed by the two parties in

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### **Befesa Aluminio (Valladolid).**

terms of the technical requirements to be fulfilled by the supplier and the applicable commercial conditions. For supplier relationships to be as productive as possible, the company demands the highest levels of quality, respect for the environment and a high degree of compliance in relation to safety, just as it does for other companies in the group.

### 10. Legal compliance.

Befesa Aluminio S.L. (Valladolid) is a member of sector associations that identify, supply and update legal texts on a monthly basis. This information is used to extract the latest requirements or their modifications and the company's legislative database is updated with the specific requirements that apply to it.

The environmental authorisations and licences obtained by Befesa Aluminio S.L. (Valladolid) for both processes, together with the information related to compliance with specific legal requirements and other legislative obligations are detailed below.

Process 1:

Resolution of 30<sup>th</sup> June 2008 that grants Befesa Escorias Salinas S.A. its integrated environmental authorisation (IEA).

Resolution of December 2009 that grants a non-material amendment to the pre-treatment plant for filter dusts and for using the gases from the reaction between the salt slags, aluminium dross and filter dusts.

Resolution of 18 June 2011 which considers the inclusion of a new type of hazardous waste as a non-material amendment.

- ✓ Compliance with all requirements. Annual summary and environmental monitoring plan submitted in January 2014.

Registration in the Register of Hazardous and Non-hazardous Waste Management Companies under number G.R. CL 4/ 96 and G.R.N.P. CL 8/ 02, respectively, and registration in the Register of Hazardous Waste Producers under number PCL A-04066411/ VA.

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- ✓ The management company's annual report and the producer's report were submitted in January 2014.
- ✓ Waste minimisation study for the 2010-2014 period.

Authorisation from the Duero Water Authority to discharge sanitation water into the ground has been obtained.

- ✓ The annual declaration report has been submitted.
- ✓ Law 16/ 2002 of 1<sup>st</sup> July 2002 on the integrated prevention and control of contamination, which establishes the emissions limits.
- ✓ The measurements taken in the first four months of 2013 have been submitted to the Regional Government of Castilla y León, and comply with the limits established in the Integrated Environmental Authorisation.

The Duero water authority has granted Befesa Escorias Salinas S.A. the right to use a maximum of 119,300 m<sup>3</sup> of groundwater per annum, under case number CP 23302-VA.

Regulation of Valladolid City Council on protecting the environment against noise emissions and vibrations.

- ✓ A technical report is submitted every four years accrediting technical compliance of noise levels. The last report was submitted in 2013 and all measurement points complied with night time levels.

Royal Decree 2085/ 1994 of 20 October, which approves the Regulation on Oil Facilities (Amended by Royal Decree 1523/ 1999 of 1<sup>st</sup> October).

- ✓ The temporary authorisation for the 5,000 L diesel oil tank has been obtained.

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Royal Decree 9/ 2005 of 14<sup>th</sup> January, which establishes the list of activities that potentially pollute the soil and the criteria and standards for the contaminated soil statement.

- ✓ Compliance with the requirement to submit a preliminary soil report dated 31<sup>st</sup> January 2007.

Royal Decree 508 /2007 of 20<sup>th</sup> April, which regulates the provision of emissions information of the E-PRTR regulation and integrated environmental authorisations.

- ✓ All the emissions and waste data was reported to the PRTR Register of Castilla y Leon of the PRIP system in January 2014.

Royal Decree 2267/ 2004 of 3<sup>rd</sup> December, which approves the Regulation on fire safety in industrial establishments.

- ✓ Compliance with the conditions that industrial establishments and installations must fulfil for their safety in the event of a fire, to prevent fires from occurring and to provide an appropriate response; and in the event that they occur, to limit their spread and enable them to be extinguished in order to stop or reduce the damages or losses caused to people or property by fire.

Royal Decree 379/ 2001 of 6<sup>th</sup> April, which approves the Regulation on the storage of chemical products and its supplementary technical instructions MIE APQ-1, MIE APQ-2, MIE APQ-3, MIE APQ-4, MIE APQ-5, MIE APQ-6 and MIE APQ-7 and its amendment.

Royal Decree 105/2010 of 5<sup>th</sup> February, which amends certain aspects of the Regulation on the storage of chemical products and approves supplementary technical instruction MIE APQ-9 on the storage of organic peroxides.

- ✓ A new caustic soda tank has been installed.

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Royal Decree 865/ 2003 of July, which establishes the hygiene and sanitary criteria for preventing and controlling legionella.

- ✓ Compliant with all notifications on functioning and maintenance operations.

Law 22/ 2011 of 28<sup>th</sup> July on waste and contaminated soil.

- ✓ All of the wastes generated and processed at the facilities comply with this RD.

Law 26/ 2007 of 23<sup>rd</sup> October on environmental liability.

Process 2:

Resolution of 28<sup>th</sup> November 2008 of the Regional Ministry of the Environment, which grants environmental authorisation to Befesa Aluminio Valladolid, S.A., for an aluminium waste recovery plant located in the municipality of Valladolid.

Resolution of 30<sup>th</sup> November 2011, which grants a start of activity licence to Befesa Aluminio, S.L. for its aluminium waste recovery activity, and amends the Order of 28<sup>th</sup> November 2008.

On 14<sup>th</sup> March 2014, the Climate Change and Environmental Prevention Service reported that the aluminium foundry activity had definitively stopped at the aluminium waste recovery facilities in the municipality of Valladolid, according to the file and the reports received, and confirmed the amendment to the environmental authorisation granted to Befesa Aluminio, S.L., deeming this to be "non-material" according to the criteria in Section 2, Article 10 of Law 16/ 2002 of 1<sup>st</sup> July on the Integrated Prevention and Control of Contamination.

FYM/ 243/ 2014 of 25<sup>th</sup> July, which amends the Order of 28<sup>th</sup> November 2008, of the Regional Ministry of the Environment, which grants an environmental authorisation for

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the aluminium waste recovery facilities located in the municipality of Valladolid, owned by Befesa Aluminio, S.L., as a consequence of non-material amendment n° 2.

The Order of 28<sup>th</sup> November 2008 has been updated in accordance with Directive 2010/ 75/ CE of the European Parliament and Council of 24<sup>th</sup> November on industrial emissions, by means of Order FYM/ 49/ 2014 of 3<sup>rd</sup> January on updating integrated environmental authorisations in Castilla y León. (BOCyL. N° 27 of 10<sup>th</sup> February 2014).

Registration in the Register of Hazardous and Non-hazardous Waste Management Companies under number G.R. CL 4/ 97 G.R.N.P. CL 42/ 02.

- ✓ The management company's annual report and the producer's report were submitted in January 2014.

Registration in the Register of Hazardous and Non-hazardous Waste Management Companies under number G.R. CL 4/ 97 and G.R.N.P. CL 42/ 02, respectively.

- ✓ The management company's annual report and the producer's report were submitted in January 2014.

The company has authorisation from the Duero Water Authority to directly discharge into the River Pisuerga via the Duero canal storm drain.

- ✓ The annual declaration report has been submitted.
- ✓ Law 16/ 2002 of 1<sup>st</sup> July 2002 on the integrated prevention and control of contamination, which establishes the emissions limits.
- ✓ The measurements taken in the first four months of 2014 have been submitted to the Regional Government of Castilla y León, and comply with the limits established in the Integrated Environmental Authorisation.

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The Duero Water Authority has issued Befesa Aluminio Valladolid S.A. a modification of the right to use a maximum of 580,000 m<sup>3</sup> of groundwater per annum, by means of amendment MC-CP 23006-VA.

Authorisation was requested via this process for a single bore hole instead of the two authorised on 23<sup>rd</sup> March 2004 under case reference CP-23006-VA.

Regulation of Valladolid City Council on protecting the environment against noise emissions and vibrations.

- ✓ A technical report is submitted every four years accrediting technical compliance with noise levels. The last report was submitted in 2013 and all measurement points complied with night time levels.

Royal Decree 2085/ 1994 of 20<sup>th</sup> October, which approves the Regulation on Oil Facilities (Amended by Royal Decree 1523/ 1999 of 1<sup>st</sup> October).

- ✓ Diesel oil tank.

Royal Decree 508/ 2007 of 20<sup>th</sup> April, which regulates the provision of emissions information of the E-PRTR regulation and integrated environmental authorisations.

- ✓ All the emissions and waste data was reported in the PRTR Register of Castilla y Leon of the PRIP system in January 2014.

Royal Decree 2267/ 2004 of 3 December, which approves the Regulation on fire safety in industrial establishments.

- ✓ Compliance with the conditions that industrial establishments and installations must fulfil for their safety in the event of a fire, in order to prevent fires from occurring and to provide an appropriate response; and in the event that they

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occur, to limit their spread and enable them to be extinguished in order to stop or reduce the damages or losses caused to people or property by fire.

Law 22/ 2011 of 28<sup>th</sup> July on waste and contaminated soil.

- ✓ All of the wastes generated and processed at the facilities comply with this RD.

Law 26/ 2007 of 23<sup>rd</sup> October on environmental liability.

Absorption of Befesa Escorias Salinas, S.A. by Befesa Aluminio, S.L.

On 5 August 2013 Befesa Aluminio S.L. informed the Directorate General of Environmental Prevention about the absorption of Befesa Escorias Salinas, S.A.- Sociedad Unipersonal by Befesa Aluminio, S.L.-Sociedad Unipersonal, providing the corresponding documentation.

The Directorate General of Quality and Environmental Sustainability published the change of holder of the environmental authorisation granted to Befesa Escorias Salinas, S.A. in favour of Befesa Aluminio, S.L. by means of the Resolution of 1<sup>st</sup> October 2013.

On 21<sup>st</sup> February Befesa Aluminio applied to the Waste Management Control Service to unify the Environmental Identification Number (NIMA) and management company authorisation held by the Valladolid work centre, following the merger on 22<sup>nd</sup> July 2013.

On 31<sup>st</sup> March 2014, the Waste Management Control Service reported that, despite not having any objections to the unification of the NIMAs management company authorisations requested, it could not issue any modification to the registration

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numbers since these derive from the centre's authorisations, which must therefore be combined.

## **11. Other important activities related to the environment.**

- To achieve its objectives, Befesa Aluminio S.L. (Valladolid) has always been aware of the need to have the collaboration of highly qualified and motivated personnel. It has therefore established an ambitious annual training plan related to quality, health & safety and environment activities in which permanent members of staff and new employees actively participate.
- Befesa Aluminio S.L. (Valladolid) understands that it needs an advanced environmental management system in order to make its environmental policy compliant and to achieve the objectives and challenges established in it, and it therefore certified its system according to the ISO 14001 standard with the B.V.Q.I certification agency in 2000. Befesa Aluminio S.L. (Valladolid) has also decided to voluntarily join the European EMAS (Eco-management and audit scheme) system in line with its commitment to the environment.
- Befesa Aluminio S.L. (Valladolid) has subjected itself to the corresponding internal and external environmental audits, according to the ISO 14001 standard and the European EMAS regulation, in order to ensure the correct functioning of its environmental management system. Audits are a key element in verifying the validity of the data that different departments obtain during the year, as well as checking the procedures and instructions required for correct management. When audits detect non-conformities in the integrated management system, corrective actions are implemented to resolve these situations. The program of internal and external audits was satisfactorily completed during 2013.
- Befesa Aluminio S.L. (Valladolid) is integrating the IEAs of the two processes referred to in this document.
- Befesa Aluminio S.L. (Valladolid) belongs to and actively participates in the following associations:

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- Spanish Quality Association (AEC).
  - CONFEMETAL, the Spanish confederation of metals businesses. The company is an active member of the environment committee.
  - Member of the permanent environment forum of the Valladolid official chamber of commerce.
  - ASEGRE, Spanish association of special waste management companies, which brings together companies operating in Spain that manage hazardous waste.
  - CASLEMA, the association of environment companies of Castilla y León.
  - Group of innovative environment sustainability companies.
- 
- Befesa Aluminio S.L. (Valladolid) regularly participates in R&D programs with different research centres and other European companies primarily to improve the integral recycling, recovery and reuse of waste from the aluminium industry.

## **12. Next environmental statement.**

This environment statement is for the purpose of informing collaborators, authorities, clients, suppliers, the media and neighbours about our management policy and for instigating constructive dialogue.

The next validated environment statement will be in October 2014.

This statement was validated by the environmental verification agency Bureau Veritas Certification, a certification entity accredited by ENAC CON EL nº ES-V-0003, with registered address at Calle Valportillo Primera, 22-24; Edificio Caoba- Polígono Industrial La Granja, 28108 Alcobendas, Madrid.

This statement is valid for a period of one year starting from the validation date.