

Excelling  
TOGETHER



SUSTAINABLE DEVELOPMENT  
REPORT 2014

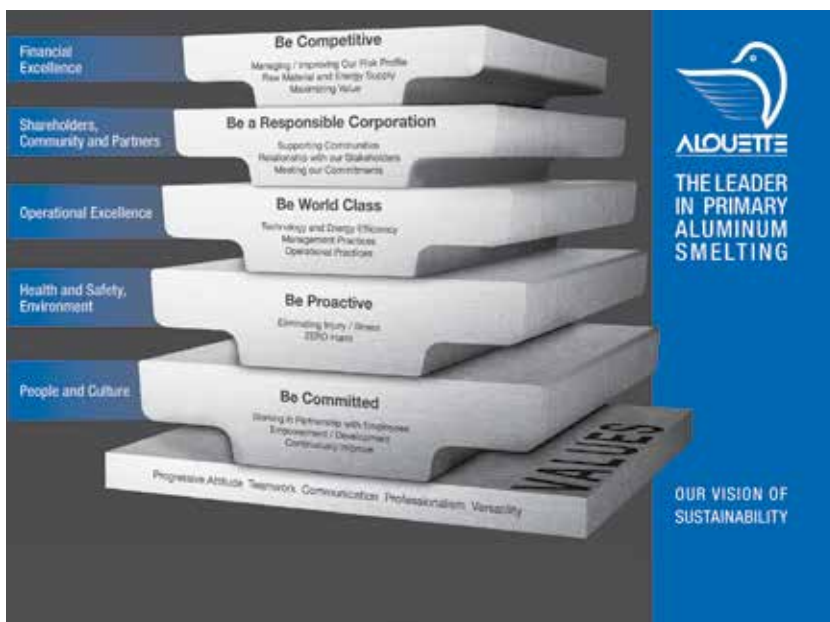
2014 IN PICTURES:  
VISIT [ALOUETTE.COM](http://ALOUETTE.COM)

## OUR MISSION

Aluminerie Alouette, as an independent operating company, shall operate as a low-cost smelter using world-class business principles and continuous optimization of processes and assets. As a sustainable company, Aluminerie Alouette will maintain high standards of health, safety and environment in order to be recognized as a responsible employer and corporate citizen.

## OUR STRATEGY

Aluminerie Alouette is driven every day by a strategy based on five principles guiding us to achieve the level of excellence that contributes to maintaining Alouette among the leading producers of primary aluminium.



## A WORD FROM THE PRESIDENT

The year 2014 presented its share of challenges and Aluminerie Alouette employees and partners moved heaven and earth to meet each one. Clearly the strength of our team is in approaching each situation as an opportunity. The theme of this year's report, Excelling Together, looks to a unified future and marks the progress made throughout our technology transition. It presents our results in various sectors and tracks new performances. Diligence of operations, continuous improvement and our sense of innovation are the foundations on which we stand to excel. Moreover, our level of compliance in health and safety as well as in environmental issues remains an essential factor in helping our employees and partners to flourish both at work and at home.

In the spirit of partnership, we strive to further our vision of sustainability and to continue to lead the way in the primary aluminium production.

Enjoy reading!

Claude Boulanger,  
President and CEO



## TOGETHER WE ACCOMPLISH

A strong team is the catalyst that allows Alouette to project itself into the future, anticipate coming challenges and meet them head on. Employees' mobilisation and commitment to continued improvements are extremely important in an industry that is more and more competitive. The continuous endeavour to do better

**A DEVOTED  
TEAM,  
ACTIVELY  
INVOLVED**

in every way is not just a trend; it is now an integral part of our day-to-day business model. As such, 464 problematic situations were analysed and handled using the problem-resolution method (PRM), and 65 larger Kaizen activities were achieved, not counting the more far-reaching, Black Belt projects. A survey is also taken every two years to measure employees' satisfaction

in terms of organizational climate. Employees can express their opinion and make suggestions regarding a variety of subjects such as communication, collaboration, respect, performance, management practices, as well as health and safety. Detailed analysis of the results leads to concrete actions in collaboration with employees. The organization is firmly committed to manpower training, supporting a healthy business culture directed at development.

## HEALTH AND SAFETY, ENVIRONMENT

### HEALTHY ACCOMPLISHMENTS



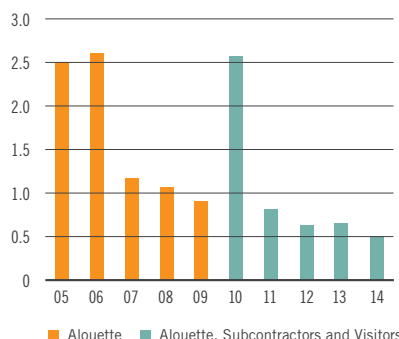
Actions taken in health, safety and environment, over the last several years have generated good results, notably in a significant reduction in the number of total injuries over one year. The attention given to events requiring first aid is an indication of reliability and interest on the part of the organization. Each event of this type is taken seriously, integrating the principles of

continuous improvement in issues regarding health and safety. A committee dedicated to health and well-being continues to suggest ways to improve awareness, particularly concerning the benefits of healthy eating habits and regular physical activity. Employees have responded enthusiastically to the activities suggested by the committee. In terms of environment, the strategy is clear: minimize the

company's carbon footprint at all times. Once again total emissions at the source as well as in the surrounding air remain below norms and targets. Results for runoff water and residues are similar, although there is room for improvement in these two areas. Employees making the effort to use good work practices every day have a significant impact on all of these results.

### TOTAL INJURY FREQUENCY

In 2014 there were 7 incidents with recordable injury, which is 2 fewer than the previous year. In a spirit of improvement, the total number of injuries was considerably reduced in spite of the intensity of operations linked to the technology transition.



Alouette Alouette, Subcontractors and Visitors

## ONGOING INTERACTION

- Since 1991, **The COBRAL Social Club** has been gathering the Alouette family together
- **42<sup>nd</sup> and 43<sup>rd</sup> Forums**, a continuous tradition of sharing
- **73% of employees** participated in the **organizational survey**
- **93%** rate of employee general satisfaction

## DEVELOPMENT OPPORTUNITIES

- **17 regular employees** received college diplomas in industrial reliability
- **529 continuous improvement activities** successfully completed
- **463 employees** involved in one or more continuous improvement project

## AN IMPORTANT MILESTONE

- **1 full year with no recordable-injury event** for 2 operation sectors

## VARIOUS METHODS

- **11 days IMPACT 100%** dedicated to health and safety and environment
- **Regular support meetings** with subcontractors
- **Go-Sees and PRMs for each injury**
- **New, safer method** of treatment for anodes effects

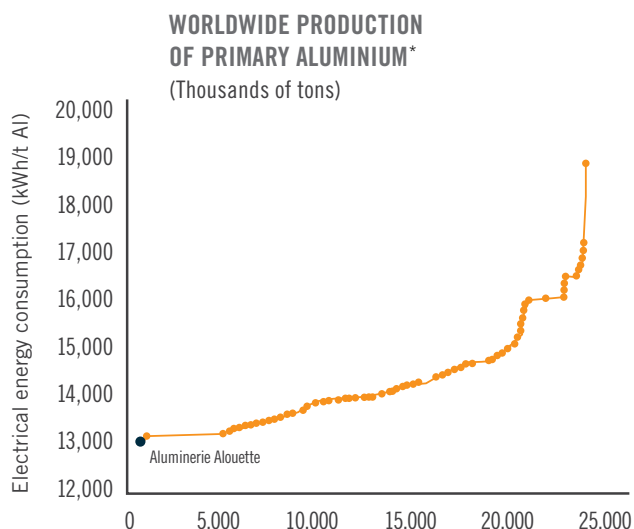
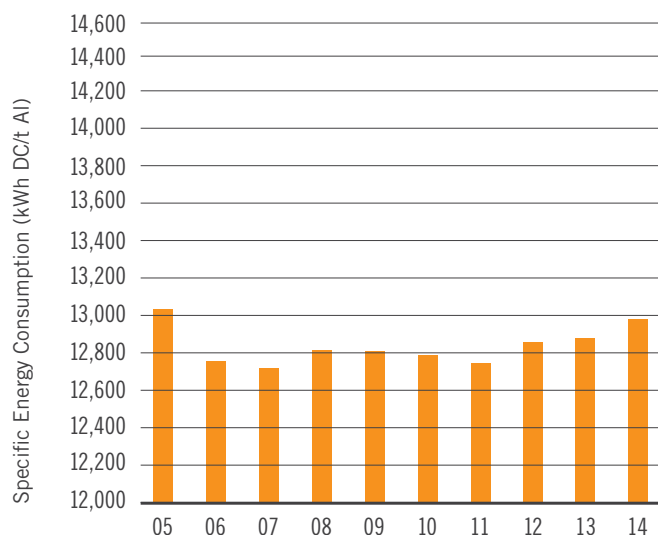
## GOOD PRACTICES

- A committed member at the **Table de concertation sur la qualité de l'air**
- Regional participation in the **Grand Prix santé et sécurité du travail**
- **Participation in 2 contests** related to environment and sustainable development
- New certification: **Healthy Enterprise I Elite**

## ENERGY EFFICIENCY

### SPECIFIC ENERGY CONSUMPTION

Specific energy consumption in the electrolytic process is 12,985 kWh/t Al of continuous current. Aluminerie Alouette consistently aims to be the worldwide reference in energy efficiency, despite the technology transition experienced.



\*Source : International Aluminium Institute (IAI) 2013.



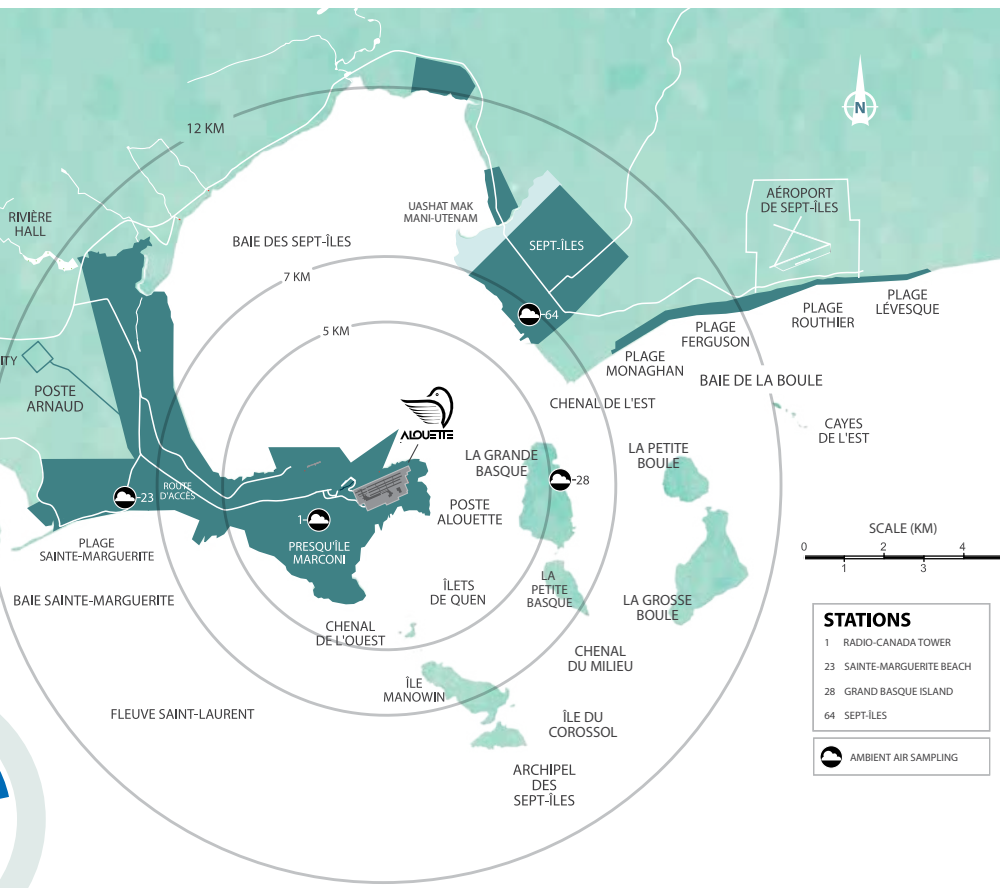
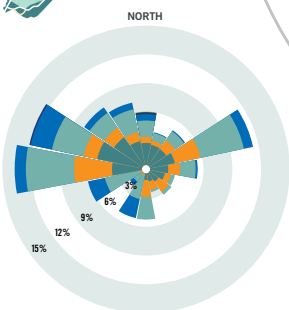
**ALOUETTE CONTINUALLY PROMOTES LOW-ENERGY CONSUMPTION IN ITS OPERATIONS. IMPROVEMENTS IN ENERGY EFFICIENCY IS A PRIORITY THAT IS CONSISTENT WITH OUR VISION OF GROWTH AND SUSTAINABLE DEVELOPMENT. THE AP40LE ELECTROLYTIC CELL WAS DEVELOPED WITH THIS VISION IN MIND.**

## MAP OF AMBIENT AIR SAMPLING STATIONS

### WIND ROSE

Wind speed and direction from the Pointe-Noire weather station.

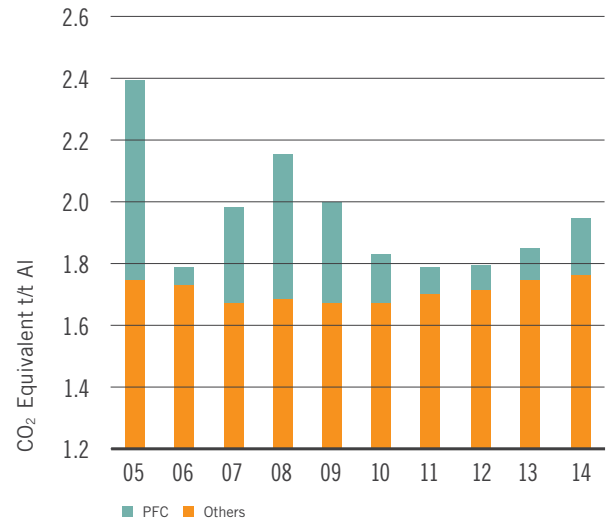
### WIND SPEED (KNOTS)



## AIR EMISSIONS

### GREENHOUSE GAS EMISSIONS (GHG)

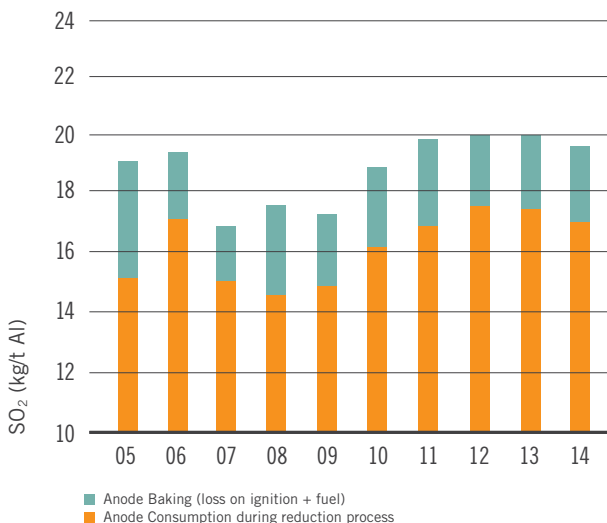
The period of technology-transition contributed to an increase in greenhouse gas emissions, measured at 1.95 t eq. CO<sub>2</sub>/t Al. Operation in parallels with two different pot technologies presented a challenge throughout this transitioning period. With efforts made to optimize the process, GHG emissions in the last months of 2014 clearly decreased compared to the beginning of the same year, paving the way for an improved future. Aluminerie Alouette is continuing its efforts to reduce greenhouse gas emissions by establishing various initiatives and closely following the Carbon Market.



**CANADIAN ALUMINIUM IS THE GREENEST IN THE WORLD,**  
THANKS TO RENEWABLE, HYDROELECTRIC ENERGY USED FOR ITS PRODUCTION.

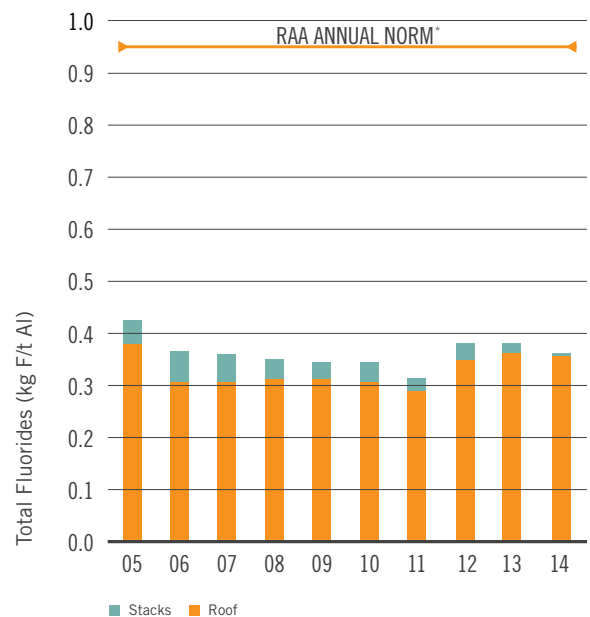
### SULPHUR DIOXIDE (SO<sub>2</sub>)

Installations for coke-mixing were used throughout 2014, decreasing sulphur dioxide emissions to 19.6 kg/t Al in spite of the increased variability in quality of raw materials. This remains an important aspect for the industry in the coming years. Through applied research, Aluminerie Alouette and its partners also intend to continue optimizing the different anode parameters produced.



### TOTAL FLUORIDES FROM REDUCTION PROCESS

Fluoride emissions in Reduction area were 0.37 kg F/t Al. Several improvements contributed to maintain levels similar to those of previous years thanks to employees involvement and consistent devotion to operational best practices, in spite of the high number of pot changes, cleaning operations of tap-out pots and the technology transition period.



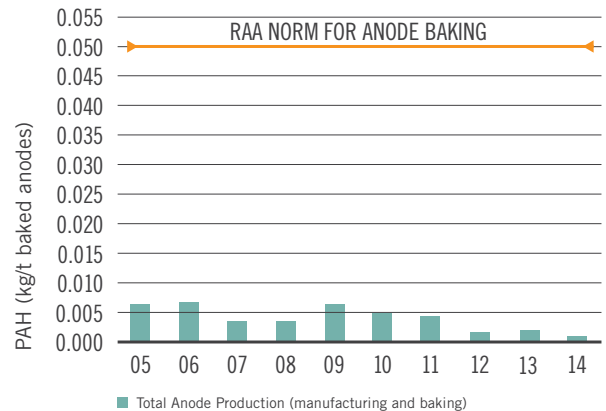
\*RAA : Règlement sur l'assainissement de l'atmosphère (The Clean Air Act)

## POLYCYCLIC AROMATIC HYDROCARBONS (PAH)

PAH emissions at the Anode Plant (production and baking) in 2014 were 0.0011 kg/t of baked anodes, significantly below Quebec anode-baking regulations of 0.05 kg/t of baked anodes. This low figure reflects the quality of our operations.



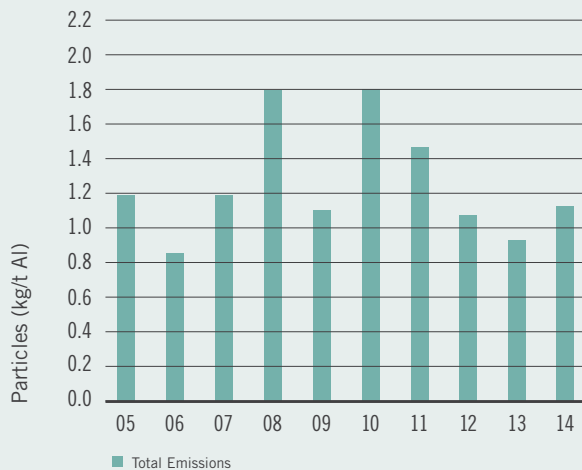
**VERY FEW PAH EMISSIONS**  
ARE ASSOCIATED WITH ALOUETTE'S  
PRE-BAKED ANODE TECHNOLOGY.



## PARTICLES

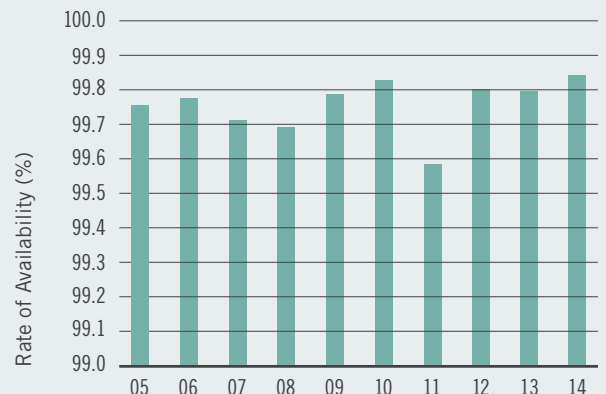
Particle emissions come mainly from roof, scrubber outlets and dust collectors. 2014 particle emissions were measured at 1.12 kg/t Al.

This low particle emission is due to reliable scrubbing equipment and to the dedicated team that maintains the filters. In spite of the pot change-out program, particle emissions were far less than in the 2010 program.



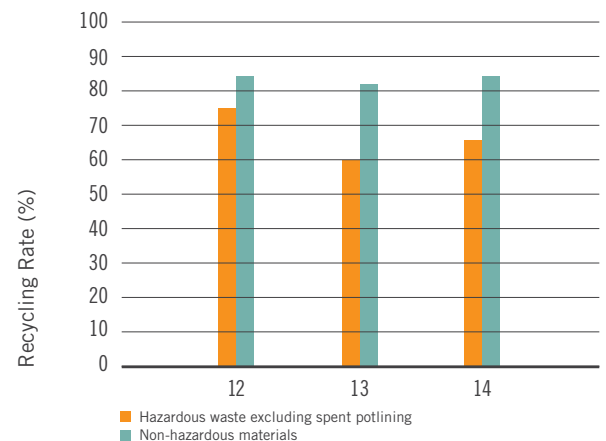
## AVAILABILITY OF SCRUBBERS

Aluminerie Alouette operates 7 scrubbers to protect the environment: 5 gas treatment centres (GTC) located in the Reduction area and 2 fume treatment centres (FTC) at the Anode Baking furnaces. In 2014 scrubber-availability rate was over 99.8%, a figure that illustrates the rigour and efficiency with which this equipment is operated and maintained.



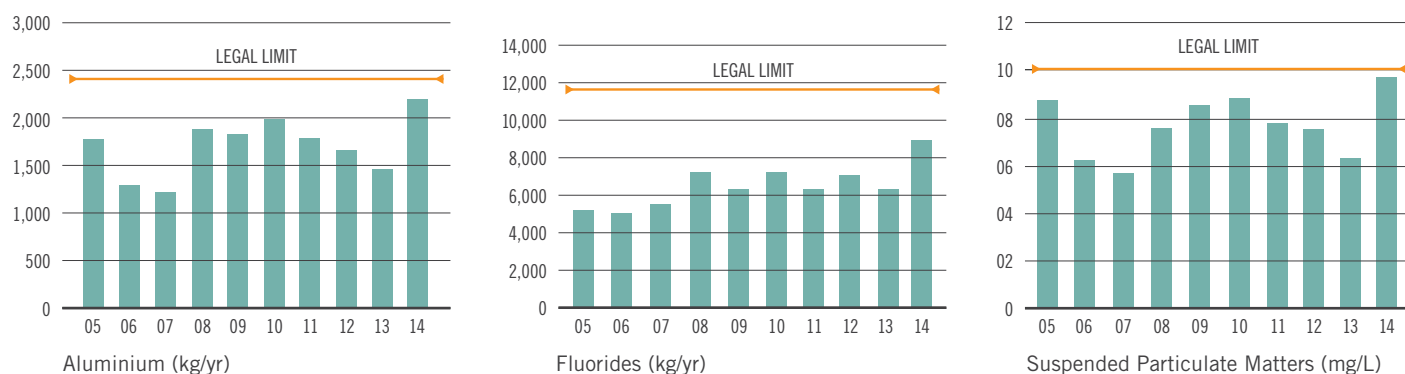
## RECYCLING AND VALORIZATION OF RESIDUAL MATTER

Within our own operations, our aluminium plant recycles almost all process by-products. In 2014, 66% of hazardous waste (excluding spent potlining) and 85% of non-hazardous materials were recycled or recovered. Leftover wastes are disposed of at authorized sites. Many Continuous Improvement Projects took place during the year, aimed to reduce the generation of waste matter and its environmental footprint, improve triage practices and heighten employees' awareness to always do better. The organization has been certified ICI ON RECYCLE (We Recycle Here) since 2010, a recognition that was renewed in 2013. Alouette remains the only large industry in the region to hold this highest level of certification.



## RUNOFF WATER

The main outflow of rainwater is located at the sedimentation basin, where water from the roof and surrounding facilities is collected. This water is sampled on an ongoing basis, with strict adherence to wastewater standards. An increase in emissions measured in 2014 can be explained by particularly high precipitation of both rain and snow, although these measurements remain below legal limit.



**PROCESS WATER IS NEVER DISCHARGED INTO THE ENVIRONMENT. INSTEAD, INDUSTRIAL WATER IS REUSED IN COOLING TOWERS AND FUME TREATMENT CENTRES. ALOUETTE IS COMMITTED TO THE RESPONSIBLE MANAGEMENT OF THE USE OF POTABLE WATER.**

## AMBIENT AIR

Alouette operates 4 ambient air-sampling stations, one of which is located in Sept-Îles. Measurements taken at these stations represent an integration of all emission sources, regardless of the origin of contaminants. The data contributes to a better understanding of air quality in general, as well as the impact of the smelter's operations. The choice of parameters measured is made in collaboration with the authorities, and takes into consideration the main atmospheric emissions from aluminium plants.



### SULPHUR DIOXIDE (SO<sub>2</sub>) IN AMBIENT AIR

SO<sub>2</sub> levels in the air met the 110 ppb standard. In addition, the maximum standard (4 minutes) of 400 ppb was never exceeded during the year.

### TOTAL PARTICLES IN AMBIENT AIR

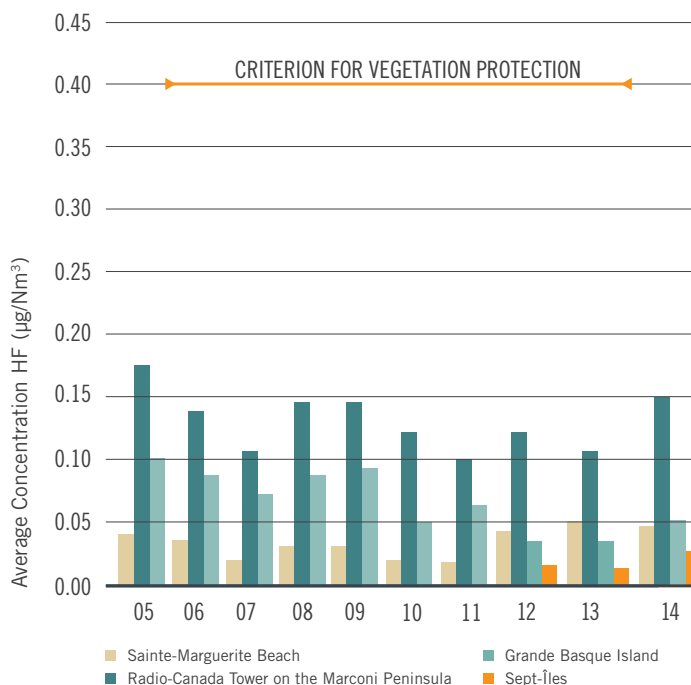
The chart represents the annual average of various samples taken. The 24-hour norm was never exceeded.



**BUDDING VEGETATION IS MORE SENSITIVE TO FLUORIDE.** ALOUETTE SCHEDULES THE MAINTENANCE OF ITS SCRUBBING FACILITIES OUTSIDE THIS CRITICAL BUDDING PERIOD. THIS MAINTENANCE IS ESSENTIAL FOR KEEPING THE EQUIPMENT IN GOOD WORKING ORDER, WITH A 99% RATE OF AVAILABILITY AND PERFORMANCE (FLUORIDE AND DUST).

## GASEOUS FLUORIDE IN AMBIENT AIR

Average concentrations of gaseous fluoride (HF) in ambient air remained below critical levels for protecting vegetation. The condition of vegetation in both industrial and non-industrial zones is evaluated every year within a 7-km radius of the plant, including Grande Basque Island and Arnaud Avenue in Sept-Îles. Results indicate that Alouette's operations continue to have no significant impact on vegetation outside the site.



## ALUMINIUM: METAL OF THE FUTURE

■ **581,569 tons of solid** aluminium allocated

### THE CHALLENGES

- **245 pots replaced** with new technology
- **Development of new hexapods** for AP40LE pots
- **12 power reductions** in January, offering **exceptional support** to Hydro-Quebec
- **Thousands of anodes sold** to help other aluminium smelters

## OPERATIONAL EXCELLENCE

### TECHNICAL ACCOMPLISHMENTS

The year 2014 was notable for its unprecedented organizational challenges, particularly in terms of operations. With the production of over 580,000 tons of primary aluminium, Aluminerie Alouette is still the largest aluminium plant in all of Americas. The pot change-out program also had an impact on operational stability, requiring the mobilization of employees and many partners.

#### A RECORD IN POT CHANGES

Various projects were launched, calling for adaptations in every sector, such as less resistive anodes and a new baking cycle, the transfer of liquid metal from furnaces to

carrousels, as well as special attention given to equipment supporting the entire transition. Even though the two pot-technologies (AP30 and AP40LE) still cohabit, nearly 75% of the transition was completed by year-end – a benchmark that allows us to confidently move forward and aim for new summits.



## COLLECTIVE ACCOMPLISHMENTS

History shows that for nearly 25 years, Aluminerie Alouette, Port-Cartier, Sept-Iles and Uashat mak Mani-Utenam communities have been working together in a spirit of collaboration. This has translated into an openness and transparency reflected in the organization by welcoming hundreds of visitors to its installations every year. At the end of this year, and for the very first time, press members and environmental organizations came to visit the gas treatment centres to learn more about the management of atmospheric emissions. On another note, the trilateral cultural agreement between Aluminerie Alouette, the City of Sept-Iles and the Government of Quebec was renewed, demonstrating continued goodwill and active participation in the cultural growth of the St. Lawrence North Shore region.

Furthermore, the inauguration of the Alouette University Building confirms our commitment toward education and development for the future generations, a legacy from Alouette and its shareholders valued at \$10 M. This building is a key element of advanced education in the region, illustrating the notion of diverse partnership with Sept-Iles College and the University of Quebec in Chicoutimi.

## FINANCIAL EXCELLENCE

### SOUND ACCOMPLISHMENTS

The global economy and particularly the aluminium market continue to be unstable, inciting all companies to relook the way they operate and try to find ways to improve. Success is unavoidably linked to better productivity, more stability and improving costs. Moving forward with 60/60 Program (\$60M in cost savings and 60,000 extra tons of aluminium between 2010 and 2018), which is more and more anchored in the everyday mindset of employees and business partners, plays a crucial role in meeting objectives. Alouette continues to pursue investment in projects that generate capital, in order that the plant and its installations can thrive and grow. The new Aluminium Logistics Centre (ALC) is a technical marvel, housing nearly 15,000 tons of aluminium before it rides the blue highway, thanks to an automated management system using self-guided vehicles. This new component contributes to keeping the organization competitive and responds to the growing need for transportation logistics.

The organization is always interested in finding innovative solutions, such as the use of natural gas to replace heavy fuel oil in anode-baking furnaces (conditional to the availability of natural gas on the North Shore). This new avenue makes for significant financial and environmental gains. Notwithstanding the involvement and contribution of Alouette and its employees, access to fair electricity rates is essential.

*A RELATIONSHIP  
OF MUTUAL  
SUPPORT*

*IMPORTANT  
ECONOMIC  
LEADER,  
SUSTAINABLE  
WEALTH  
CREATOR*

## ACTIVELY ENGAGED

- **1<sup>st</sup> International Aluminium Conference** in Canada
- **36<sup>th</sup> Orange Alouette Volleyball Tournament**
- **62<sup>nd</sup> Alouette North Shore Invitation Curling Tournament**
- Participation at the **Salon sur les meilleures pratiques d'affaires**

## SIGNIFICANT CONTRIBUTIONS

- **\$230,000** donated with employees to Opération Enfant Soleil
- **\$192,531** donated with employees to Centraide Duplessis (United Way)
- **The Alouette University Building**, a legacy in advanced education for future generations

## AN OPEN-DOOR ORGANIZATION

- Over **700 visitors** during the summer season
- First **technical and environmental meeting** with press members and the community

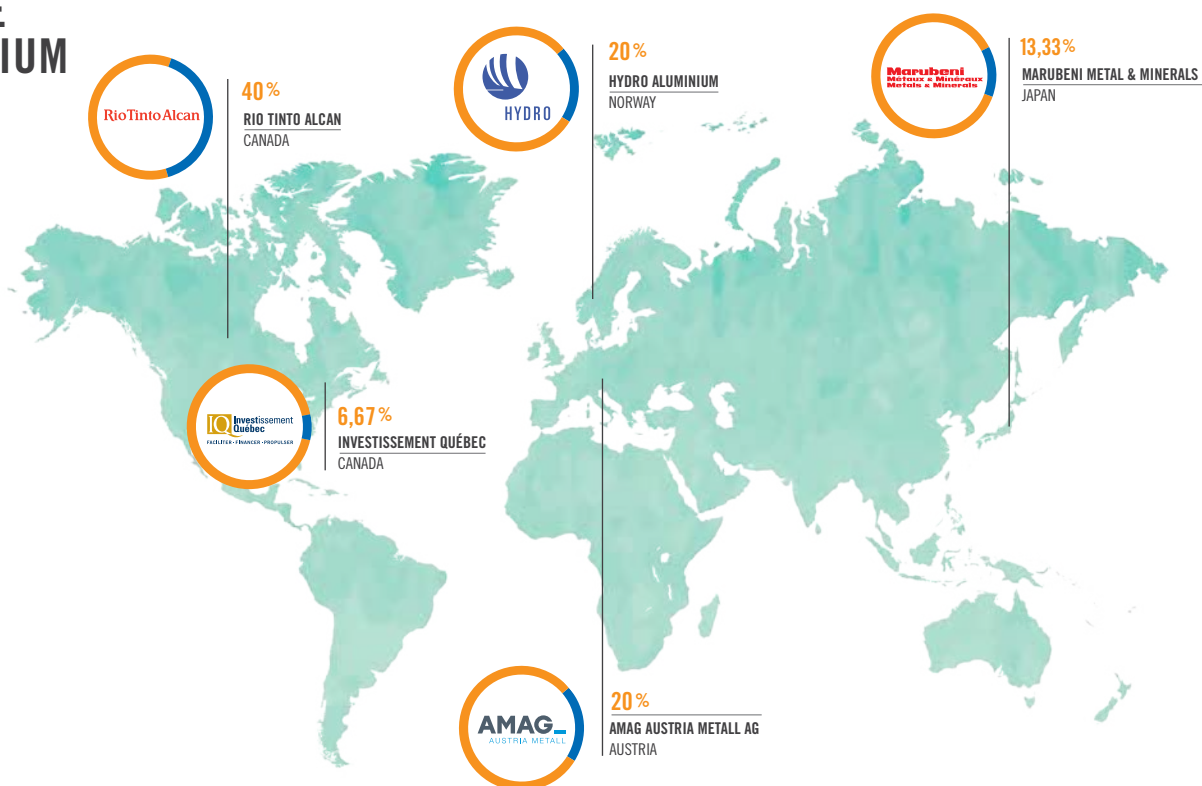
## CONCRETE OUTCOME

- **Hundreds of jobs** for 3-year period, in the aluminium field
- **Quebec Aluminium Industry Cluster** presented to North Shore representatives
- **10** North Shore citizens granted for a 24-hours training at **École d'Entrepreneurship de Beauce (EEB)**
- **2 students** granted for the **Camp Entrepreneurs En Devenir** at **EEB**

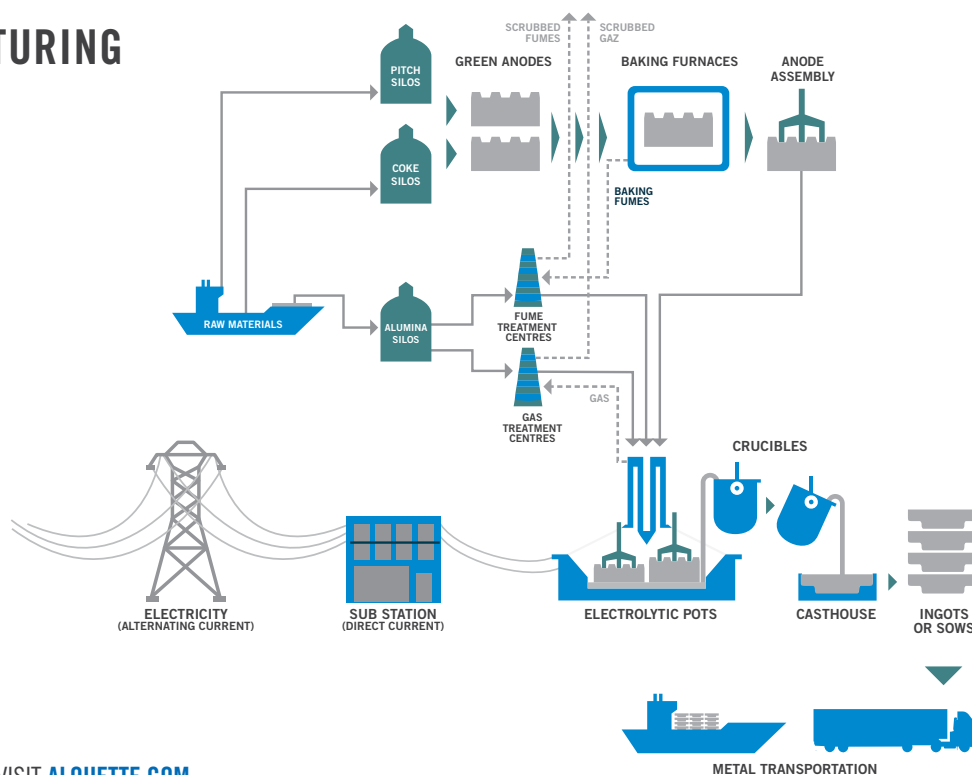
## SUSTAINABILITY

- Inauguration and start-up of the **Aluminium Logistics Centre**
- Beginning of the construction of the **new 161 kV power line**
- Nearly **\$30 M** invested in Capital Expenditures Projects

# ALOUETTE CONSORTIUM



## MANUFACTURING PROCESS



2014 IN PICTURES, VISIT [ALOUETTE.COM](http://ALOUETTE.COM)

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