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## Aluminerie Alouette Parlez Vous Phase II?

By Brian Dunn Published: Sep 26 2005

SEPT ILES, Quebec -- If ever there was a fish out of water, Joe Lombard is it: A South African living in Sept-Îles, Quebec, a remote town of 25,000 on the north shore of the St. Lawrence River, 600 miles northeast of Montreal, where virtually everyone speaks French.

The 45-year-old executive, who speaks Afrikaans, English and German, has been living in Sept-Îles since 2001, when he accepted the job as president and chief executive officer of Aluminerie Alouette Inc.

He was only a year into his new post when the company announced a Canadian \$1.4-billion (\$1.1-billion) project to expand capacity to 550,000 tonnes a year from 245,000 tonnes, making Alouette the largest and most efficient aluminum smelter in North America and the fifth-largest in the world. The expansion, completed three months ahead of schedule, has been operating at full capacity since mid-June.

Make no mistake, Lombard is very happy in this fishing and outdoor paradise after the rigidities of German society when he worked for VAW Aluminium AG for five years. But, as he described it, it's a wonder he ended up in Sept-Îles at all.

"The first time I came to Sept-Îles was for another company in 1995. I remember very clearly flying over Alouette in April and taking pictures of the ice flowing in the river. And looking at those photos in an album back home, I made the comment, 'this is a place I would never live'."

Lombard, a mechanical engineering graduate from Pretoria University in South Africa, ended up in the place he would never live because VAW, one of the original shareholders of Alouette, had the management contract for the smelter and offered him the president's job, which he accepted.

However, he won't renew his contract when his current five-year deal expires at the end of next year. He and his wife, who have two young sons, will be looking at other opportunities ... and not necessarily in the same business. "People are talking to me. I'm on the market."

The idea of building an aluminum smelter in Sept-Îles dates back to the 1970s with the construction of the massive hydroelectric dams in James Bay by Quebec government-owned Hydro-Québec, which had excess capacity to sell. The project was further advanced in 1985 after a new deep-water terminal was built at Pointe-Noire, the actual site of Alouette, four miles across a bay from Sept-Îles but 20 miles around the bay by car.

In 1987, the Quebec government gave a mandate to the Société Générale de financement du Québec (SGF), a Montreal-based provincial investment agency, to put together an international consortium to build an aluminum smelter somewhere in Quebec. With its deep-water port, qualified manpower and proximity to major power grids, Sept-Îles got the nod.

Aluminerie Alouette was established in 1989 under the partnership of the SGF; Austria Metall AG, Ranshofen, Austria; Hoogovens NV of the Netherlands; Kobe Steel Ltd., Kobe, Japan; Marubeni

Corp., Tokyo; and VAW, Bonn, Germany. The smelter produced its first ingot in June 1992. Since then, Hoogovens, Kobe and VAW have cashed out. The current partnership consists of Alcan Inc., Montreal (40 percent); Austria Metall (20 percent); Norsk Hydro ASA, Oslo, Norway (20 percent); SGF (13.33 percent); and Marubeni (6.67 percent). Each takes ingot based on their shareholding.

With the completion of Phase II, the plant now includes two electrolysis facilities, each 1 kilometer (0.6 mile) long, two anode producing plants and a casthouse producing 1,500 tonnes of aluminum ingot and sow per day. Employment has grown from 560 to 900 non-unionized workers.

The expansion was made possible when Montreal-based Hydro-Québec awarded Alouette 500 megawatts of power, enough for a medium-size city, to increase the province's primary metal production. The power contract is based on Hydro-Québec's heavy industrial "L" rate of 3.8 cents per kilowatt-hour, with annual increases capped at 2 percent.

Alcoa Inc., Pittsburgh, wanted a similar deal to support the C\$1-billion (\$850-million) modernization of its Aluminerie de Baie-Comeau smelter, which would have increased annual production capacity to 547,000 tonnes from 437,000 tonnes. But a new Quebec government elected in 2003 nixed the deal because it wanted to cut the provincial budget by reducing business subsidies.

"The decision to expand Alouette was based on market demand that has been growing steadily for a number of years--between 3 and 5 percent annually--and the economic size of a modern smelter is around 500,000 tonnes. You have a lot of synergy effects by being a smelter of that size," Lombard said.

One of the successes of the expansion that Lombard is particularly proud of is that not only did the original facility continue to operate during construction of Phase II, but it did so at record levels in terms of production, safety and environmental concerns. "And it is a benchmark project throughout the world in terms of the investment amount, the output and timeline," he said, noting that it was completed three months ahead of schedule and under budget.

Lombard attributes the success of the project to a strategic decision made early on that the operational side of Phase I, the engineering side of Phase II and the shareholders couldn't talk to each other except through him so that they couldn't interfere in the management of the project and slow it down.

In terms of production costs, Lombard estimates that Alouette is in the top 10 and possibly the top five in the world, due in part to new processes introduced after the completion of Phase II. "We operate at a higher amperage than we did before. Amperage is the direct relationship between the operations and the output. And we have a test section, and we're quite aggressive as far as the pursuit of that is concerned within the constraints of the power contract that we have," he said. "We've also drastically reduced the work-in-progress inventory all over the plant, like the number of anodes we have in stock and all the other materials we have throughout the process. We didn't just double everything, although we doubled capacity. There were synergies in the plant for more efficient use of our resources, and because of that we are one of the most efficient smelters in the business."

Lombard said visitors from around the world drop in on Alouette because of its innovations. On the technology side, the unique test section allows the company to test on two different amperages using different kinds of configurations. "We extended the existing facility by 18 pots, and that's our test section. It's like a mini pot room with its own fume treatment center, and we're operating some of the equipment there at the world's highest amperage," he said. "We know the

top smelters around the world and the people by name and we share our ideas because ultimately, collectively, it makes us all work better."

Lombard isn't concerned about being undercut by smelters in low-cost countries such as China and India because their input costs are too high to compete. "China is the world's No. 1 producer as far as tonnage is concerned and India is a good producer, too, but they've got huge internal demand as well. For the moment, we see a positive in that."

Apart from an attractive power contract from Hydro-Québec, Lombard said another advantage Alouette has over most of its competitors is its location in North America for product distribution and proximity to Europe for the same reason. "Essentially, Alouette supplies the metal to the shareholders and they do the distribution."

As for interaction between the five shareholders, Lombard said it is paramount that they know they have a well-managed, well-run, cost-efficient facility. And once they know that, they're more relaxed.

"We have various committees at which we distribute information equally among them. I think that's also very important. It's a question of communication. They must need to feel they have the information they need to make their daily business decisions, and they need to know this plant is performing the way it should be performing. We also have three board meetings a year and various other committee meetings where we discuss budgets and other financial issues," he said.

To reduce unit costs, the plant continues to increase efficiency. A C\$5-million (\$4.2-million) project is now under way to introduce a different type of anode that will allow the plant to produce more effectively.

It also has excess capacity in the anode plant that it sells to reduce unit costs. "That's our big drive: how to get our unit costs to go down. We're looking at other ways to produce more in the pot room by being more energy efficient. There won't be big jumps, but small ones that add up in the end. One percent of 550,000 tonnes is a lot of tonnes."

Lombard also points out how energy efficient Alouette is, with very little pollution escaping into the environment, and lists a number of innovations.

To limit fluoride emissions, the plant introduced a program to increase hooding cell efficiency in the existing pot rooms, the installation of real-time gaseous fluoride monitors in the new pot rooms and wall screens posting the emissions evolution. The analysis equipment provides first-line workers with the necessary information to quickly react in case of abnormalities.

The casthouse, besides being innovative in design, is more efficient. The facilities have been designed to capture the heat given off by the molten metal and reintroduce it into the casthouse's heating system.

And the traditional method of cooling the sow molds with water jets has been replaced by a new cooling process that uses air jets during metal casting, thereby saving water. In addition to improving quality control and reducing production costs, the method is much safer. "When you have water you have to have the recirculation system, the water-treatment system and so on, and we didn't want that. We decided we wanted to go for an air-cool system. We've got a lot of cold air in Sept-Îles, so we decided we might as well use it," Lombard said. "So we put in the world's largest low-profile sow carousel--at 130,000 tonnes of capacity a year--and we have three of them. This must be one of the world's most cost-efficient casthouses because we've effectively got one operator on (each) of those casters which processes the metal very efficiently."

The latest concrete technology was used to manufacture about 1,328 "Jersey walls"--moveable 3-meter by 1-meter concrete blocks used at Alouette for rapid access to the buildings' basements, which run along the Phase II pot rooms.

The concrete contains an additive recycled from spent potlines, a residual material from the carbon and refractory lining of the electrolysis cells at the end of their useful life. Before being used to form the walls, the spent cell linings were shipped to Sainte-Catherine, Quebec, for transformation. The end product increases concrete's resistance to compression.

Another innovation was the use of pre-cast concrete for the longitudinal pot support beams and operating floor. This method, a first for smelters using the Pechiney AP-30 electrolysis process, improved the performance of the structural element for the electrical insulation. The same technique was used for the furnace walls of the anode baking furnace.

One of Alouette's objectives is to produce more value-added products. It signed a three-year, \$18.5-million carbon supply agreement with SGL Carbon AG, Wiesbaden, Germany, under which the companies will develop improved carbon products for the aluminum industry using Alouette's internationally recognized operational expertise.

"We have quite a few contracts like that for the common (industry) goal to work better and more efficiently," Lombard said. "And we've got various partners and supplying companies in that process with whom we work very closely in developing leading-edge, innovative technology to make us the better smelter that we want to be." Lombard declined to provide details, citing the confidentiality of the contracts.

"But it's also an advantage to our suppliers, because when they say Alouette uses it, the other guys buy it. When they know it's gone through the mill of Alouette, that's kind of a stamp of approval," he said.

"We've also got some very interesting things going on with equipment suppliers. We had one case of a local company that used to import from Europe the molding vibrator equipment used to make the anodes that we are now able to buy here because of the continuous developments that we've done since Alouette was originally built."

Another example is the large vehicles used in the pot room to transport the metal. Traditionally, they were imported from Norway but are now manufactured in Quebec. In turn, the operator of the vehicles can market them worldwide on the basis of their association with Alouette.

"Three of the world's biggest engineering companies have their world head offices for aluminum in Montreal, namely SNC-Lavalin (Group Inc.), Hatch (Ltd.) and Bechtel (Corp.)," Lombard said. The first two designed and completed Phase II. "All the smelting projects around the world are managed from Montreal. And wherever you find a smelting project, you will find Quebec people working on it. These are some of the examples of the smelting technology that we have here in Quebec."

Referring to Phase II innovations, Lombard said, "We had some ways of doing construction that were substantially more efficient than what was used in the past. For sure, this is going to become the standard for future projects. And also the way we placed our contracts. We moved some contracts forward that made them available at the time we needed them. Alouette was ready for the startup of the big pot room well in advance.

"When the pot rooms were ready we would be able to take off the metal on a continuous basis from the casthouse. We would be able to supply that pot room with alumina on a continuous basis. It sounds very simple and logical, but many smelters don't do it," he said.

Can Alouette expand further?

"The world's biggest smelter produces about 1 million tonnes and there are two smelters in Russia that are supposed to produce close to that. Presently, there are no modern smelters that are that big. Two are approaching that, both in the Middle East. I see no reason why a plant cannot expand to that level. It's a question of the availability of power, which accounts for about 30 percent of production costs," Lombard said, citing growth opportunities for aluminum in the automotive and rail transportation sectors as well as packaging.

"People are looking at wheel loads and when you can retain the total wheel load, but if you can reduce the weight of your vehicle it means you can load more material. It's as simple as that," he said.

One market with great potential is in the packaging industry, he said. "You see aluminum going more and more into packaging to help keep products fresher and longer. There's also the combination of cardboard and aluminum and plastic and aluminum. And we're not even talking about beverage cans," he said.

"It's a modern metal, too, with an aesthetic value, so you see it more and more in architecture. One of the key features of aluminum is that you can extrude it quite easily like squeezing a tube of toothpaste. You can make very complex shapes with extrusion for modular designs."

What lies ahead for Lombard?

"I have to keep my options open. I have to decide whether I want to have a corporate life or whether I want to have something else. I haven't made my mind up yet, but I'm in the process of making it up," he said. "Alouette, however, has created many opportunities. It's been a successful project, and when you're part of a successful project you owe your debt to your badge. And when you have a good badge, people look."

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