



McINNIS CEMENT PLANT

RACING TOGETHER AGAINST TIME

CANADIAN CONSULTING ENGINEERING AWARDS – 2017
Natural Resources, Mining, Industry & Energy Category

Engineering
for a changing world

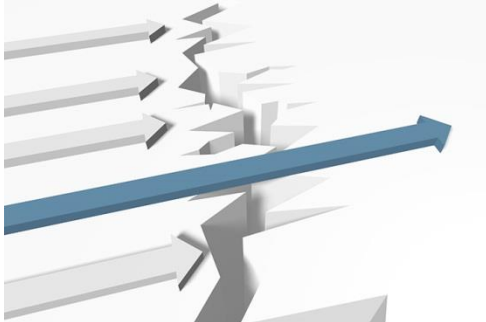
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Summary



A major investment and the hard work of hundreds of professionals will help the McInnis Cement plant become a model for environmental performance.

BBA's high-level expertise was called in to help bridge a costly delay in the electrical and automation design work by using a successful atypical project method and a great deal of innovation.

Today, the plant is ready to take the market by storm, with reduced transportation costs and cutting-edge technology.

Summary



McInnis Cement Plant – View from the North

Innovation

The McInnis Cement project is located in Port-Daniel–Gascons, Québec, off the Baie-des-Chaleurs. It is co-owned by several private investors in Québec.

Innovation



Port-Daniel-Gascons site location

In the right place at the right time

Built right next to a natural deposit of extremely high-quality limestone, this 2.2 million metric ton capacity plant is in the right place at the right time. After 10 years of sputtering, the construction industry is now firmly growing and demand for cement is taking off again.

The company's plant in Port-Daniel–Gascons is the first new plant to serve Eastern Canada, as well as the U.S. Eastern seaboard and Great Lakes region, in more than 50 years. Equipped with a deep-water port dramatically reducing transportation costs, advanced technology and a host of sustainability features, McInnis is one the most important industrial projects in Canada.

Time to act

In August 2015, while the rest of the project was proceeding, electrical and automation fell behind schedule. One thing's for sure, McInnis could not let the work slow down.

The McInnis plant was using conventional engineering techniques, but a higher level of expertise had to be brought in fast to accelerate project completion.

BBA was mandated to perform the electrical, automation and instrumentation detailed engineering within one year. The race against time began!



Switchgear Cabinet

Racing together against time



When BBA arrived, it was vital for McInnis that there be no additional delays in the project. To achieve this goal, the electrical room dimensions were produced while the wiring plans were being finalized.

Normally, before even beginning construction on one of the four sectors of a plant, plans have to be prepared along with quoted specifications as well as the list of cables and electrical loads. These are accompanied by electrical room specifications.

In this case, however, there was not enough information about the electrical loads when lighting and services installation had to proceed.

C) Project highlights

Innovative, atypical execution

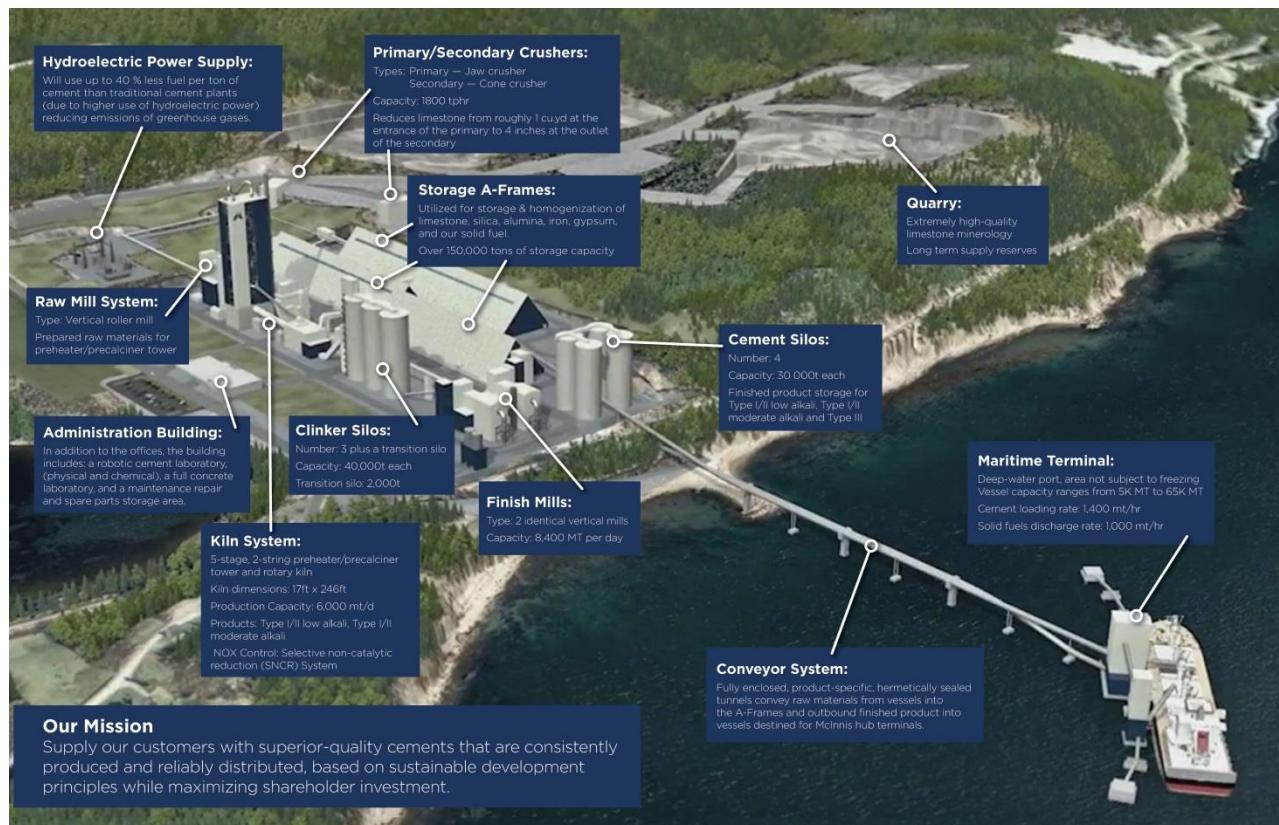
BBA immediately recognized it had to stray from the path in its method of establishing packages. Thus, plans were prepared for the work to be done in two packages for each of the four sectors

1. Lighting and services, installation of cable trays
2. Electrical load connection

Experience enabled BBA to make shrewd deductions about the proper quantities of cable trays and electrical equipment required.

Thanks to this imaginative approach and good practices, overall project deadlines could be respected.

But that's only part of the story.



McInnis Cement Plant – layout and components

Complexity

Many stakeholders were involved in the project. To obtain their collaboration and speed up work, outstanding coordination was key.

Complexity



In-plant procedures were handed over to a non-Canadian firm mandated to create a turnkey solution for McInnis. It was agreed that this company was to be assisted by an engineering firm familiar with both Canadian and Québec industrial standards.

The role was given to BBA, which reviewed all procedures to ensure the planned logistics, installation and equipment complied with all applicable quality and safety standards (CSA and electrical codes, in particular). BBA reworked all documents to make them compliant and “biddable”, while coordinating stakeholder actions.

Budget control

The budget was tight and costs had to be controlled from the bid phase on.

To ensure fair pricing for the client in electrical contractor bids, BBA produced highly detailed electrical drawings for contractors to consult. This minimized additional charges (“extras”) that would be incurred. Such detailed documents could also be used as a reference in case of any discrepancies while work was being performed.

Collaborative hub

In short, BBA took on the role of a collaborative hub for the various project stakeholders involved in electrical installation and automation. This ensured code compliance, smooth teamwork and accelerated, successful project completion. The BBA team included up to 35 professionals working together in order to meet those deadlines.



117 meter high preheating tower

Social and/or economic benefits

For a coastal area economically depressed due to fishing limitations and forestry disputes, McInnis' arrival was a great relief.

During its construction, the plant was one of the largest industrial projects in Canada, with a peak workforce of approximately 1,200 construction workers in the fall of 2016. The 33-month project injected millions of dollars into the local economy. According to the local mayor, the vast majority of accredited local construction workers have been employed there.

When the McInnis plant hits its regular production levels, it will employ approximately 100 full-time workers. And, the benefits of its economic impacts reach even further.

Other economic benefits

The company is currently building a new receiving terminal in Sainte-Catherine in Québec near Montréal, which should be finished this spring. It's expected to accommodate some 25 ships per year. The Mayor of Sainte-Catherine stated, "We're pleased that this Gaspésian project can offer benefits to other areas such as ours."

The City of Oshawa has also benefited from the establishment of a cement terminal as part of the plant's distribution network.

McInnis continues to play an active role in its Port-Daniel–Gaspé community through a committee made up of elected and non-elected local officials and residents.

Social
and/or
economic
benefits



McInnis Cement Plant – platform

Environmental benefits

The McInnis plant was the perfect opportunity for the owners to equip it with the very latest environmental technology. They ensured it met, and sometimes exceeded, the most stringent environmental standards, making its ecological footprint one of the smallest in the cement industry.

Environmental
benefits



It is estimated that the McInnis project will produce cement with a 20% lower carbon footprint per ton than the North American cement plant average.

Also, being one of the few cement plants located next to a deep-water marine terminal, this project will substantially reduce its own ecological footprint for cement transportation, as one ship can carry the equivalent of 1,500 truckloads of cement.







Dust collectors

One of the main components of current U.S. environmental standards regulating cement production is atmospheric emissions reduction. To avoid the dispersion of dust caused by limestone and other ingredients required to manufacture cement, dust collectors were required at each stage of production.

As engineers of record on the electrical and automation portion of the contract, BBA was asked to install a greater-than-usual number of dust collectors. This included the electrical hook-up of the collectors and automation equipment. It also included electrification of the active sensors designed to closely monitor air opacity and to ensure collector performance.

A project with a high level of sustainability

Other sustainable development actions put in place by McInnis include:

-  Water management
-  Soundscape
-  Management of hazardous and waste materials
-  Fauna

BBA is proud to have worked alongside a company with such strong sustainability principles and initiatives.



Meeting Client Needs

Thanks to outside-the-box planning and execution, as well as the deft coordination of several contractors, BBA was able to help McInnis achieve their goal. This is how the client's needs were met or exceeded:

Meeting
Client's needs



Despite an important delay in the electrical installation, BBA was able to re-plan and coordinate the electrical and automation portion of the project to meet all internal deadlines, and deliver on time and on budget.



By optimizing the original electrical layout design, BBA was able to reduce the number of junction boxes and the amount of cabling, thus reducing client costs.



Through its leadership and knowledge of the CSA, Canadian Electrical Code and other standards, BBA ensured the uniformity of results by teaming up with a non-Canadian company.



By successfully developing an atypical project methodology and implementing it across a large team of stakeholders, BBA created a very satisfied client.

McInnis now has a finished product that meets, and in some respects exceeds, the world's highest cement industry standards. McInnis, a 21st century cement plant, is about to rock the competition.

BBA's expertise made the difference!

