

Origine tower: When wood withstands a trial by fire



Standing 41 metres tall, the Origine tower will be the “tallest wood condo tower in the world.”
LE SOLEIL, PATRICE LAROCHE



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Le Soleil

(Québec) After being attacked by flames for two hours, steel girders soften and stretch like gum. Concrete reinforcements, they burst and break. When subjected to the same test, the solid wood panels used to build the structure of the Origine tower in the eco-district of Pointe-aux-Lièvres (Québec) withstood the blaze for four hours.



Yvan Blouin, project architect, and his son George, promoter and President of Synchro Immobilier.

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Promoter George Blouin of Synchro Immobilier is adamant: when it comes to fire resistance, wood is safer than steel and concrete. “Nordic Structures Bois, the Chibougamau company that manufactures the cross-laminated timber panels, has invested a lot of money in lab tests and experiments since 2012. For example, it once kept a fire going in an apartment for 2 hours and 12 minutes,” said Mr. Blouin. “On the outside, the temperature of the wooden wall increased just 3 degrees.”

The wood withstood the trial by fire. Following an 18-month approval process, the Régie du bâtiment du Québec approved the construction, on the edge of the Saint-Charles River, of the “tallest wood condo tower in the world.” To date, at least. It will be 13 storeys and 41 m high under a “minor exemption” to zoning bylaws, which allow for 40 m.



The southeast side overlooks the city.

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An open-air storey shows the cross-laminated timber panels and beams and the steel stability plates (on the floor).

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George Blouin invited *Le Soleil* to visit the site before the wooden structure gets covered to comply with Régie du bâtiment requirements. The inside will be made of drywall, and the outside will feature masonry on the lower levels and aluminum and steel on the upper ones.

“Why pour so much effort into developing these solid wood panels only to camouflage them in the end? Because of the ‘sandy soil’ found near the river,” explained George Blouin. “If we’d built using concrete, we couldn’t have had more than six floors.” The promoter wanted a tall and light building that wouldn’t cause the ground to move or settle. Wood was the logical choice for this tower destined to become a landmark of this district straddling Limoilou and Saint-Roch.



From the eighth floor, the Saint-Charles River and the Pointe-aux-Lièvres Bridge make for a beautiful northeastern panorama.

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On the ninth floor, which was still roofless when *Le Soleil* visited, workers were erecting the exterior structures under the watchful eye of George’s father, architect Yvan Blouin. On the lower levels, the drywall is already being installed. This is a very logistics-heavy project! “We’re always in problem-solving mode,” said the promoter. “Adverse weather and high winds have been the main challenges,” added foreman Normand Beauchemin.

The building rests on a raft—a slab of concrete three feet thick with a footprint twice that of the building. “Everything we dug up and removed weighs the same as the building with the occupants and their furniture in it,” mentioned Georges Blouin to illustrate Origine’s relative lightness.

Earthquakes and floods



Steel stability plates.

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The two wooden elevator shafts are spectacular.

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The building will resist fire, but it must also be able to withstand earthquakes. That's why steel stability plates are affixed along the perimeter of the wooden floors on every storey as well as on more sensitive points—certain panel joints, for example. George Blouin maintains that the rigid floor will bend in the event of an earthquake and then return to its normal shape. "It'll absorb the earthquake's energy."

Origine is "protected from the highest tides observed [on the St. Lawrence and Saint-Charles Rivers] in the last 100 years," he adds. There's only one underground level (the parking garage), and it's made of concrete, like the ground floor. Since concrete is less vulnerable to water and humidity than wood, it serves as a kind of "podium" for the tower.

The exterior and interior wall panels are two and three storeys high, respectively. This cuts down on the amount of joints, speeds up construction and reduces costs, especially crane rental fees.

For Synchro, the Origine project is quite an accomplishment. "We're showing that you can make a building with a 100% wooden envelope, including the roof," said George Blouin.

To the millimetre



The garbage chute holes, like all the other openings, are factory-cut.

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The 100% spruce wood panels are manufactured in Chibougamau, at the Nordic Structures Bois plant. Every single opening, for everything from ventilation ducts to garbage chutes, is calculated with millimetre precision.

That said, Nordic refuses to present Origine as a pilot project. Wood is already widely used as a structural material in Quebec and Canada. Nordic itself boasts over 100 solid-wood projects. Origine's claim to fame is its height and purpose as a residential building.



This picture shows the development plans for the site and the building's exterior finish.

The first condos will be delivered this fall. "Half of them are sold already," said George Blouin. The starting price is \$200,000. There will be common areas, a gym, a swimming pool, a locker room... "People will be able to just carry their kayak to the river." And their bike to the bike path. They will also be within walking distance of the Videotron Centre and Parc Victoria's Stade Canac.

Information: condosorigine.com

Investor partners

- › Construction contractor **EBC**, which was in charge of the Musée national des beaux-arts du Québec expansion
- › **Nordic Structures Bois**, the engineering and marketing division of Chantiers Chibougamau, which built two large buildings in Québec: Université Laval's Super PEPS and the Chauveau soccer stadium
- › **Synchro Immobilier** "It's our first time acting as promoters without being involved in the construction," said President George Blouin.

The numbers

\$30 million: the cost of the project

94: the number of condos

13: the number of storeys

41 metres: the height of the building

In a word

Cross-laminated wood › This is the result of a wood assembly process wherein layers of planks are superimposed, arranged perpendicularly and glued together, producing stable panels. The panels are made in Chibougamau by Chantiers Chibougamau using Quebec black spruce, “the hardest of the soft woods.” It is often referred to by the acronym CLT (cross-laminated timber).

Solid wood › Nordique Structures Bois also uses pieces of wood as small as one by two inches, glued together. These pieces come from the tops of trees or from usually unused cuts that are abandoned in the forest and are older, more durable, more stable and prettier. They are integrated into cross-laminated planks to make what is known as “solid wood” or “engineered wood.”

Origine’s energy efficiency

- Natural gas heating and hot water
 - Radiant floor heating
 - LED lighting for common areas
 - Smart garbage chute on each floor
 - Charging station for electric vehicles
 - 100% solid wood structure
- * Wood provides excellent thermal insulation. It stores carbon as it grows and emits 60% less CO₂ than concrete. Harvesting it requires less energy than manufacturing steel or concrete.