

ALEXANDRA DISTRICT ENERGY UTILITY EXPANSION

LOCATION

Richmond, British Columbia

SIZE

279 m²

COMPLETION

2015

ARCHITECT

DIALOG

STRUCTURAL ENGINEER

Dialog

GENERAL CONTRACTOR

Stuart Olson Inc.

WOOD SUPPLIER

Structurlam Mass Timber Corporation

PROJECT OWNER

Lulu Island Energy Company

PROJECT OVERVIEW

Alexandra District Energy Utility (ADEU), operated by Lulu Island Energy Company, uses geothermal technology to provide clean, efficient energy for heating and cooling. ADEU extracts thermal energy (heat) from the ground to supply customers with heat for their homes or businesses. During the summer, the energy flow is reversed, and heat is pumped into the ground to cool homes.

The building is integral to the City of Richmond's strategy for an 80 percent reduction in greenhouse gas emissions associated with energy use by 2050 and to reduce reliance on non-renewable sources of energy. The City is also committed to using local, low-carbon wood products in facilities operating on behalf of the municipality. So, when ADEU needed to expand its operations, it made sense to use wood in their new facility.

Wood was used as both framing and exterior cladding in this innovative facility, which houses pumps connected to a nearby geo-exchange field as well as back-up natural gas boilers and cooling towers. Cross-laminated timber (CLT) wall and roof panels along with glue-laminated timber (glulam) beams and columns were chosen to achieve the significant spans and clear heights required by the large equipment housed in the building.

ADEU's facility is located adjacent to public recreation space, which gave the City an opportunity for education. The striking building is designed with large windows so park visitors can see into the structure and learn about the operations. The facility also has a green roof, which provides numerous benefits including reduced stormwater flows into the City's storm sewers.



Photo courtesy of Michael Elkan Photography

“It’s an entirely wood structure, which is great for this kind of building. On the inside, we kept the CLT exposed as much as we could. It creates an interesting contrast with the machines, the shiny metal finish and the white plastic pipes, in contrast to the warm CLT wood and glulam.”

Esteban Matheus, Architect, DIALOG

WOOD USE

Glulam columns and beams frame the structure while CLT was used for wall and roof panels. Both arrived at the jobsite fully fabricated, allowing the structure to be built in only five days. The extra load required for the green roof was easily addressed by the wood structure without compromising the required clear spans or interior clear height of the building.

Both glulam and CLT provided efficiency in terms of structural and seismic capabilities. CLT wall panels were easily cut into the triangular and trapezoidal profiles that gave shape to the varying height clearances required inside. The CLT roof extends beyond the walls of the building to create a prominent southern façade facing the park; the overhang

also provides a large sheltered exterior space for community events. Inside, the CLT was left exposed, providing an aesthetically warm interior along with the flexible configuration needed to lay out the complex cabling and piping.

The exterior siding is made from yellow cedar sourced from naturally fallen trees. Cedar is known for its moisture resistance and durability, which helps reduce maintenance requirements for the building’s exterior.

The wood structure was framed to allow for future expansion and modification. The project has won several awards, including the prestigious 2016 System of the Year Award from the International District Energy Association.



Photo courtesy of Michael Elkan Photography

FOR MORE INFORMATION

This profile is published by Forestry Innovation Investment, the Government of British Columbia’s market development agency for forest products.

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