

AGRICULTURE AND ENVIRONMENT

BIOINDUSTRIAL AND CIRCULAR INNOVATION

BIOINDUSTRIAL MATERIALS

FUNDING DETAILS

A Robotic Prefabrication Platform to Accelerate the Industrialization of housing Industry and Create Demands for Wood Fibre Products

The proposed project will develop and demonstrate a robotic factory solution for manufacturing affordable and sustainable building components. Compared to the existing manufacturing technology that requires significant upfront investment in facility and equipment, the robotic solution is versatile, scalable and more cost-effective. It will help to break barriers in industrializing the home building industry, create high-paying jobs, upskill the workforce and address affordable housing challenges.

Automation and factory-based production will have a big impact on the material supply chain and create a strong market demand for high-specification products, such as OSL and LSL, and motivate upstream suppliers in the forestry sector to invest in value-added wood fibre products.



RECIPIENT:

Landmark Group of Companies



PARTNERS:

**Promise Robotics
University of Alberta**



TOTAL BUDGET:

\$1,500,400



AI FUNDING:

\$250,000



PROJECT DATES:

**Apr. 2022 – Sep.
2024**



PROJECT TRL:

**Start: 6
End: 9**



APPLICATION

The scalable robotic solution and AI-assisted CAM platform developed and demonstrated at this project will bring considerable advantages to real estate developers, homebuilders and contractors of different sizes and in different markets. It will lower the investment threshold of building component prefabrication equipment and facilities and thus makes the prefabricated construction more accessible to the residential construction industry.



ALBERTA INNOVATES

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PROJECT GOALS

- Develop a robotic automation solution for the manufacturing of affordable and sustainable housing
- Establish an operational robotic pilot factory to validate developed technology and demonstrate its effectiveness

BENEFITS TO ALBERTA

- The adoption of robotic technology and prefabrication method in housing will considerably change the workforce structure in the construction industry, creating new jobs and mitigate the skill labor shortage in Alberta.
- The wide adoption of the developed robotic technology will also increase broader capacity in Alberta's manufacturing ecosystem, including end-effectors, assembly tables, as well as material handling system. All future robotic factories will be engineered and manufactured in Alberta.
- Prefabrication and automation will have a big impact on the material supply chain. Machine processing requires greater precision. This puts the onus on the upstream suppliers to deliver high-specification engineered wood products, such as LSL and OSB. The market demand will drive the Alberta's forest industry and bioindustrial sector to invest on value-added products and make better use of Alberta's forest resources.



6 Publications



5 Students
Trained



5-10 Project Jobs



20-30 Future Jobs



5-8 New
Products/Services



0.5 kt/yr Project
GHGs Reduced



22 kt/yr Future
GHGs Reduced

CURRENT STATUS

SEPTEMBER 2024 – COMPLETE

In collaboration with the project partners, Landmark Group has established a pilot robotic factory in Nisku, Alberta. Equipped with two robotic wall cells, one robotic floor cell and a CNC cutting station, the factory has completed the production of wall and floor panels of three single-family homes for the Landmark Group in the last two months. The project consortium will continue test and validate the robotic solution in the facility and further develop the technology to support large scale adoption for the housing industry.

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