ALBERTA INNOVATES

AGRICULTURE AND ENVIRONMENT

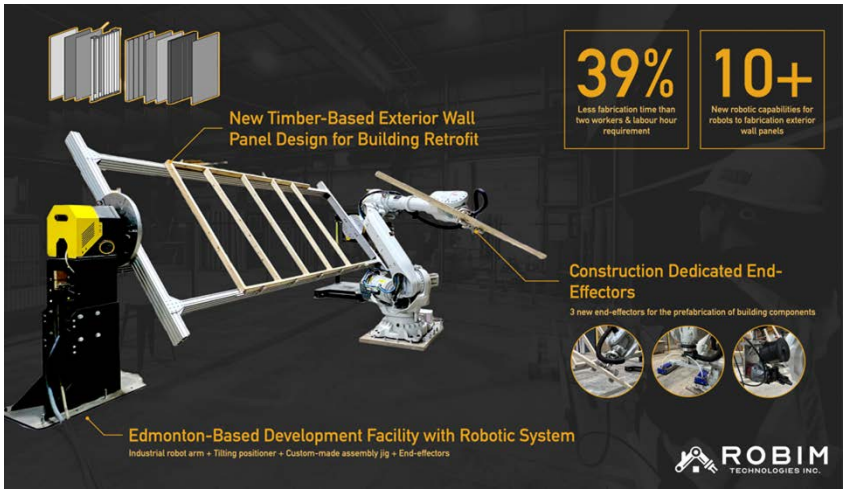
BIOINDUSTRIAL AND CIRCULAR INNOVATION

BIOINDUSTRIAL MATERIALS

FUNDING DETAILS

Development of Robotic Capabilities for the Fabrication of Bio-Based Building Components

RoBIM Technologies Inc. is developing comprehensive robotic fabrication processes for a wide variety of construction components. To achieve the goal of bridging the gap between novel robotics technologies and conventional construction methods, this project encompasses developing robotic capabilities tailored to fabrication processes for bio-based building components. In particular, this project is targeting robot capabilities that are proficient in handling, processing and assembly of bio-based materials such as wood which is the primary material in building construction. It is expected that at least eleven new robotic capabilities, each with newly developed or improved end-effectors, will be developed within the scope of this project. Along with the benefits of making the construction industry more competitive, this project will generate greater demands for biomaterials for a growing market.



RECIPIENT:

RoBIM Technologies Inc.

PARTNERS:

Clark Builders | AltaFab Structures | University of Alberta | SAIT – CIRAMM | ABB Canada | DIALOG Design | LJ Welding Automation | ARGUS Machine | TECO Westinghouse | Stony Brook

TOTAL BUDGET:

$1,037,600

AI FUNDING:

$345,500

PROJECT DATES:

January 2024 – September 2025

PROJECT TRL:

Start: 3
End: 5

APPLICATION

The target market for the RoBIM solution is the residential and commercial construction industry, with the goal of bringing robotics to building sites to improve project efficiency and the quality of fabricated building components. Construction is one of the largest industries in Alberta (and the world) and, compared to other sectors, has not yet experienced significant productivity gains through the implementation of new technologies. The adoption of robotics and automation presents key opportunities to improve industry productivity.

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PROJECT GOALS

- Develop robotic fabrication capabilities utilizing bio-based materials, encompassing end-effector and robotic process development.
- Assess the commercial potential for each newly developed capability.
- Identify product use cases to demonstrate RoBIM's robotic solution.
- Demonstrate robotic capabilities in building prefabrication and validate the potential benefits in improving productivity and reducing the need for human labour.

BENEFITS TO ALBERTA

- Expand the commercial ecosystem for innovative construction techniques by partnering with leading companies in the construction and manufacturing industries, robotic solution providers, and research institutions.
- Improve green construction methods by introducing more environmentally friendly building materials, minimizing construction waste, improving constructability, and introducing cost and process efficiencies.
- Develop competitive technologies that can be commercially applied to the global construction industry.
- Recruit and train new types of HQPs in Alberta to advance the global competitiveness of its construction and robotic industries.
- Expand an Edmonton-based development facility with automation systems that can be further utilized to fabricate other types of construction industry components.

2 Students Trained

1 New Products/Services

8-50 Future Jobs

1 Publication

CURRENT STATUS

April 2025 – In progress

RoBIM Technologies Inc. is working with the University of Alberta to develop a new robotic capability for installing batt insulation. This capability has been tested in a lab environment within a scaled robotic cell and will be integrated with RoBIM's robotic fabrication module for full-scale testing. Meanwhile, RoBIM's engineering team has completed a market survey for tools and designed mechanisms for a robotic nailer and CNC spindle, enabling the robot to fasten OSB sheets to wood studs and perform milling work.