

CLEAN RESOURCES

CLEAN TECHNOLOGY

BIOENERGY & CIRCULAR ECONOMY – WASTE CONVERSION

FUNDING DETAILS

The All West Bioindustrial Park

The All West Bioindustrial Park's (AWBIP) mission is to create an industry-led bio-industrial ecosystem that will drive commercialization of innovative technologies, processes, and products through the collaboration of business, academia, researchers, and government with a special focus on waste management, thermal treatment technologies, and bio products.

Biomass waste disposed of in landfills is a known source of greenhouse gas (GHG) emissions in the form of landfill gas emitted as biomass decomposes over time. The All West Bioindustrial Park (AWBIP) is supporting the development of innovative waste management techniques that utilize thermal treatment processes to process a variety of biomass related waste streams. These technologies are intended to reduce the volume of biomass deposited into landfills, reducing GHG emissions, and generate value-added bioproducts for a variety of applications. A key gap being addressed at the AWBIP is a field demonstration of pre-commercial technologies, which allows for the validation necessary to advance these technologies to full commercial deployment.



RECIPIENT:
**All West
Demolition Ltd.**



PARTNERS:
**Innovation Reduction
Strategies Inc. (IRSI), Nelson
Environmental Remediation,
Octoco Inc.**



TOTAL BUDGET:
\$10.1 Million



AI FUNDING:
\$5 Million



PROJECT DATES:
**MAY 2019 –
JUL 2022**



PROJECT TRL:
**Start: 7
End: 9**

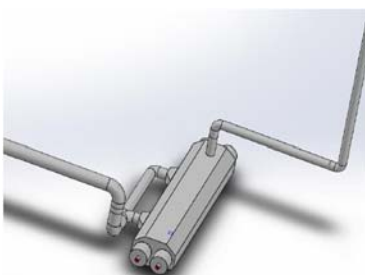


Figure 1 Solidworks Drawing of Pyrolysis Process

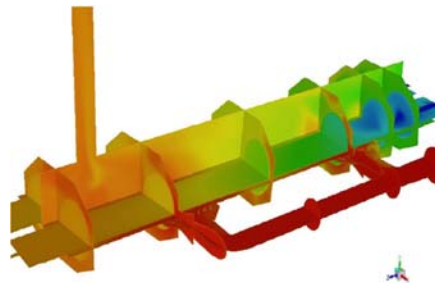


Figure 2 Computational Fluid Dynamics Modelling of Temperature Profile

APPLICATION

The four key target markets for the activities undertaken at this facility are waste management, biomass utilization, soil remediation, and raw biochar production. The knowledge generated by the projects undertaken at the AWBIP will help drive the development of a bioindustrial ecosystem that will function to help bolster the adoption of processes, technologies and products supported at the facility.

ALBERTA INNOVATES CLEAN RESOURCES

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PROJECT GOALS

The key goals of the project are to:

- Develop and validate thermal treatment technologies and processes to improve waste management practices
- Utilize the thermal energy of biomass for downstream value-added activities and products
- Foster the development of an industry led bioindustrial ecosystem
- Generate quantifiable greenhouse gas offsets

BENEFITS TO ALBERTA

The successful implementation of these technologies and processes could result in:

- Reductions in GHG emissions through reduced landfill deposits and reduced reliance on petrochemical energy sources;
- Improvement in the understanding of thermal treatment practices and their applications to the waste management and soil remediation sectors;
- Development of new waste tracking solutions to improve visibility of available resources for the bioindustrial sector;
- Future partnerships between private and public stakeholders in the Alberta based bioindustrial sector; and
- The development of bio products with new market opportunities driving new employment opportunities.



**6 Journal Article
Publications**



**2-6 Students
Trained**



**5-10
Project Jobs**



5-15 Future Jobs



**1 -4 New
Products/Services**



**1-3 Spinoff
Companies**



**6-10 kt/yr Project
GHGs Reduced**



**8-15 kt/yr Future
GHGs Reduced**

CURRENT STATUS

JUL 2022 – Completed

AWBIP facility setup is complete, includes a proof of concept for the utilization of an indirect heating system for the remediation of contaminated soil, thermal destruction of residual biomass material for the generation of high-quality thermal energy, generation of high-quality raw biochar through indirect pyrolysis, and facilities to pre-process waste debris for thermal treatment. Development of tracking system for waste materials and downstream bio products has been developed, value added uses for biochar products have been trialed and confirmed, partnerships with academic institutions have been carried out, full life cycle assessment for biochar production has been executed, and forward looking opportunities for future sites as well as new participants at the AWBIP are being evaluated.