

Advanced BioRefinery systems turn agricultural and forestry waste into biomass products

Ottawa's Advanced BioRefinery provides farmers and foresters with economical waste disposal systems capable of recovering original investment in under five years through energy savings

Fast facts

Corporate profile

ABRI converts biomass – livestock and forestry waste – into renewable and environmentally friendly Bio Oil . Bio Oil, which is similar to crude oil, can be used as fuel, fertilizer and char. ABRI, through pyrolysis – chemical decomposition of biological materials by heating in the absence of oxygen – is able to reduce waste amounts in addition to offering a climate-friendly alternative to fossil fuels because the conversion of waste to Bio Oil does not release harmful carbon dioxide into the atmosphere.

Why Ottawa

ABRI is recognized as an industry leader and innovator and actively takes advantage of programs and agencies available in Canada's capital city. In July 2005, Ottawa-based Sustainable Development Technology Canada (SDTC) approved \$48 million in funding for biofuel technology projects and ABRI was among only four recipients from across Canada.

Business advantage

ABRI customers can expect to make back their original investment – usually \$150,000 for small on-site operations and up to \$2 million for large transportable operations – in under five years through energy and fertilizer savings. Keys represent mechanisms/tools which facilitate planning, investment and technology decisions in clean energy projects.

Hidden within Canada's agricultural and forestry business is a wealth of potential energy known as biomass – biological materials that can be used to make fuel. Advanced BioRefinery Inc. (ABRI), an Ottawa-based research and development company provides farmers and foresters with waste management solutions by converting biomass – livestock and forestry waste – into renewable and environmentally friendly Bio Oil . Bio Oil, which is similar to crude oil, can be used as fuel, fertilizer and char. ABRI, through pyrolysis – chemical decomposition of biological materials by heating in the absence of oxygen – is able to reduce waste amounts, provide fuel and offer a climate-friendly alternative to fossil fuels because the conversion of waste to Bio Oil does not release carbon dioxide into the atmosphere – the leading cause of greenhouse gases.



ABRI further increased its technologies environmental benefits by developing portable biorefineries – the facility required for pyrolysis. The biorefineries are capable of going anywhere a car can – saving transportation costs, cutting fuel consumption and allowing for individual control over waste management. ABRI initially developed its technology to prevent waste from becoming landfilled and causing environmental harm. However, its biorefinery technology is proving to be particularly valuable by providing an economical alternative to fossil fuels – which are continuously rising in price and prompting people to seek alternative fuels and new ways to draw on existing energy sources.

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ABRI offers the agricultural and forestry industry two waste-to-energy solutions to fit individual needs. Customers can either opt for an on-site facility, ideal for farms, or can select a larger, portable facility – the optimal choice for forestry. The larger facilities are not permanent fixtures and can follow logging operations, reducing cost of biomass transportation.

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The Canada Agriculture Museum – a working farm – is also evidence that Ottawa is a farm-friendly and environmentally-aware home for ABRI. In fact, Ottawa is the only world capital that has a working farm located in city boundaries. The museum showcases Canada's unique agricultural heritage where visitors can explore and learn about farm life and advances in agriculture technologies. In addition, the Province of Ontario has around 60,000 farms – a ready market for ABRI's technology.

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Customers can either opt for an on-site facility, ideal for farms, or can select a larger, portable facility – the optimal choice for forestry. The larger facilities are not permanent fixtures and can follow logging operations, reducing cost of biomass transportation. Both options provide disease control, nutrient management and conversion of waste to Bio Oil, fertilizer and char.

In addition to saving waste from piling up in already over-crowded landfills and providing an alternative fuel source, the nutrients that are found in the char and ash, produced from the waste, can be economically and environmentally beneficial. For example, char – a solid that results from incomplete combustion of the waste – is an excellent soil fertilizer because carbon, which is found in char, promotes growth and healthy growing conditions, resulting in higher quality crops and healthy soils for tree planting.

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Future growth plans

ABRI is currently focusing on its two target markets, agriculture and forestry. In addition to expanding business to include farm and forestry biomass dryer development, the company is continuing its biorefinery research. Presently, ABRI has two major projects. For agriculture, ABRI is developing a system that will convert poultry litter to liquid fuel. The second project, for forestry, is a transportable facility capable of converting 50 tonnes of forestry waste each day into Bio Oil.

ABRI is projecting future growth as fossil fuels continue to rise in price and as concern over its supply increases and ABRI acknowledges the market need for its technology, especially in the United States. In 2006, the U.S. government announced its commitment to have 20-30% of energy produced from biomass by 2030. Canada has approximately two to five times more biomass resources and biomass production potential than the U.S. – representing a huge potential for ABRI.

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