# Ensyn's renewable bio-energy and bio-chemicals offer environmentally responsible options to a world with increasing energy needs

*Ensyn's RTP™ system converts residuals from forestry and agricultural sectors into bio-oil. Bio-energy and bio-chemicals produced from bio-oil offer solutions to customers seeking to lower their carbon foot-print*

## Fast facts

### Corporate profile

Ensyn produces bio-oil by converting residuals from the forestry and agricultural industries in its Rapid Thermal Processing (RTP) system. Bio-chemicals extracted from the bio-oil are used in food flavourings and other commercial products, and Ensyn's bio-oil is well suited for use in thermal applications as well as power generation, and with further processing, as a renewable transport fuel.

### Why Ottawa

Ensyn works alongside over 40 scientific research labs and organizations in Ottawa. An example, CANMET Energy Technology Centre, one of Canada's leading federally funded science and technology organizations, has a mandate to develop and demonstrate energy efficient and renewable energy technologies and processes.

### Business advantage

Ensyn's bio-oil can be directly substituted for fossil fuels in a range of applications. Ensyn's technology has a successful commercial track record spanning two decades. Current production capacity at Ensyn's production facility near Ottawa – in Renfrew, Ontario – is 100 dry tonnes each day, but projects are in the works for plants that are 5 to 10 times the size of the Renfrew plant.

Ensyn Technologies Inc., using its biomass to liquid conversion technology Rapid Thermal Processing (RTP), produces bio-oil, which is used to produce bio-energy and bio-chemicals. Since 1989, Ensyn's technology has operated commercially and offered a bio-oil for use in many applications. Ensyn, with corporate presence in Canada and the U.S. ,has its principal design, engineering and R&D operations located in the Ottawa region.

**Ottawa**
***Canada's Innovation Capital***

Ensyn's refineries extract marketable bio-chemicals from bio-oil. The chemicals are ingredients in food flavourings, resins and other commercial products. Even after bio-chemical extraction, bio-energy can be made from the remains. Because Ensyn processes residual materials, it can help meet our world's increasing energy needs and for this reason does not compete for land that can otherwise be used for growing food.

The RTP fast pyrolysis process converts residual solid biomass from the forestry and agricultural sectors into liquid bio-oil. This process occurs at a temperature of about 500°C, when a turbulent stream of hot sand flashes the biomass into a vapour. The vapour is then rapidly condensed into a liquid. This process occurs in less than 2 seconds, yielding high quantities of bio-oil.

Ensyn's bio-oil has been successfully tested as boiler fuel by equipment manufacturers and independent research labs in Europe and North America. Ensyn's bio-energy, bio-chemical products are CO2 neutral.

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*As petroleum prices rise and environmental impact costs are accounted for, there are numerous opportunities for Ensyn's RTP technology, especially in energy markets that have fiscal incentives for renewable transport fuels such as "green diesel" and "green jet fuel".*

According to Statistics Canada, Ottawa-Gatineau has the second-largest concentration of scientists and engineers in North America, surpassed only by Silicon Valley. The fully-equipped Ensyn RTP bench and pilot-scale facilities in Renfrew, Ontario, can produce bio-oil and analyse its components from a host of different feedstocks. Ensyn's lab is supported when needed by others in the region, and so locating Ensyn's innovation engine in one of the world's top R&D cities makes business sense.

In addition to its research and product development capabilities, Ensyn has built and commissioned seven commercial plants. The largest one, which Ensyn owns itself, is located in close proximity to Ottawa – in Renfrew, Ontario. This RTP refinery processes 100 dry tonnes of residual wood per day from Ottawa Valley forestry industries.

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## Business advantage

Ensyn provides the total package – the company's strategy is to build, own and operate RTP plants – for converting a wide variety of residual materials to marketable products. Ensyn's RTP process makes economically and environmentally efficient use of natural resources. RTP reactors produce no aqueous effluent, conform to local environmental criteria, and use by-product gases and char internally to provide the thermal energy required for the conversion process.

Ensyn's RTP technology has a successful commercial performance track record spanning two decades. Ensyn's bio-oil is already well suited for use in thermal applications as well as power generation. As petroleum prices rise and environmental impact costs are accounted for, there are numerous opportunities for Ensyn, especially in energy markets that have fiscal incentives for renewable transport fuels. With some further processing, Ensyn's bio-oil can be refined into renewable transport fuels such as "green diesel", "green gasoline" and "green jet fuel".

In addition, over thirty bio-chemicals are commercially extracted from Ensyn's bio-oil and this list is ever expanding.

## Future growth plans

Ensyn's strategy moving forward is to jointly build facilities with secure feedstock suppliers and other partners from forest products companies, agricultural products processing companies as well as energy and fuel production companies looking to green their market offerings. Projects to build plants that are 5 to 10 times the size of the Renfrew plant are presently in the works.

To meet increasing demand for green fuels, future growth plans at Ensyn include establishing RTP facilities that are 100% bio-fuel and renewable transport fuel related. Currently Ensyn has several commercial projects in development in Canada, the USA and Europe.

## Contact information

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