



Challenge: LCBA – Paper Excellence on Syngas solutions from wet bark and wood waste feedstock

Challenge Statement/Synopsis:

Paper Excellence has made significant strides in decarbonizing its operations, with our facilities utilizing an energy mix of 80% renewables and the remaining 20% being derived from fossil fuels.

The kraft lime kiln is the last major fossil fuel user in Canadian kraft lime kilns. There are currently no commercially available technologies available to decarbonize this process.

Although the use of gasification technology to produce syngas for use within a Kraft lime kiln has been demonstrated in other parts of the world, with state of the art and much larger lime Kilns, this will be a first for Canada. Canadian Kraft lime kilns are much older and smaller and do not allow for the use of low caloric (HHV of 250 – 400 BTU/ft³) value syngas, produced through mature and commercially available gasification technologies, without compromising the calcination reactions or Kiln throughput.

Paper Excellence is therefore seeking a syngas with an energy density that is similar to natural gas (approximately 1,000 BTU/ft³) derived from available hog fuel feedstock (bark and wood waste) with moisture content between 45 - 68%, that has been in salt water. There is currently 150,000 bone-dry tonnes of feedstock available on an annual basis.

This syngas will be used to replace natural gas in lime kilns and the solution solicited should be a system that can generate at least 44 GJ/hour of output.

This challenge is seeking a mature (preferably TRL 9) solution. However, well-developed TRL 7 – 8 solutions may also be accepted.

Context for the Challenge:

Canadian kraft lime kilns emit approximately 930,000 tCO_{2e} per annum combined (approximately 20 kilns assuming an average emissions per kiln is 50,000 tCO_{2e} per annum).

This challenge is important as this is the last remaining unit operation that relies on fossil fuels. By developing a solution for the lime kiln, Canadian Kraft Pulp Producers can reach their net-zero goals.

This goal is driven by the rising cost of carbon in Canada as well as by our customers that are seeking to reduce their scope 3 emissions. In addition, developing bioenergy will help to shield our mills from the impacts of increasing cost of fuel.



Response Criteria:

Please provide the following information in your application/response form. Please ensure that you only provide non-confidential information.

- TRL
- Cost per GJ, this must be at least comparable to the cost of natural gas in Canada or lower (assume \$8-\$20/GJ)
- Fuel density and quality
- Capital and operation costs

The Opportunity:

As part of the LCBA Canada program you may have the opportunity to:

- Pilot or deploy your solution with Paper Excellence, the second largest pulp producer in the world, if your solution is selected and deemed suitable.
- Meet new customers and explore new markets for your solution.

About Paper Excellence Group:

The Paper Excellence Group is a private equity holding company that oversees individual pulp and paper business units. Its operations include the manufacturing of pulp and specialty, printing and writing, and packaging papers, producing over 10 million tons annually with a workforce of over 14,000 in its nearly 40 locations across the Americas and Europe.