

Dear Committee Members,

My name is Marek Hejduk, CEO of HEJMAS Agrifibre Technologies. We invented, tested, patented and third party commercially tested a world changing technology that utilizes farming field waste to make high-end industrial pulp. Our process was accepted by the Canadian Patent Office as being 100% Novel, 100% Innovative and 100% Commercially Relevant.

The process utilizes 80% less water, 70% less energy and time, 88% less CO₂ per ton produced, and leaves 5% of the chemical footprint without the use heavy sulfuric chemicals as compared to wood biomass. Obviously since we use farmed field waste it is a sustainable production methodology; it finished the circle for circular environmentalism with regard to farmed product and doesn't deplete the planets' ability to process CO₂.

Our company has applied for a number of grants: Strategic Innovation Fund (Stream 1 – Stream 5), Low Carbon Economy Fund, Innovative Solutions Canada Open Fund, Business Scale Up and Productivity in the Prairie Provinces, National Research Council IRAP Program, Proof of Concept Program NPC Canada, and the Sustainable Technology Development Fund. While each fund has rejected us, the Innovative Solutions Canada response provided us with some valuable insights.

- A. Paper production from hemp has been established for thousands of years and is currently commercially available. The proposal highlights concern about tree-based paper, but does not provide details on how the Bidder's system improves on other bast fibre paper processes. The proposal does not demonstrate a new technology, significant modifications to existing technologies, nor an improvement in functionality, cost, or performance over other bast fibre paper processes. The Bidder did not provide sufficient details to determine an appropriate response to this question. It appears to be a theoretical improvement on one type of pulping process.
- B. The Bidder has suggested some successful lab results. However, the Bidder has not demonstrated a path through scale up to justify a biorefinery pilot situation. There are not enough details to determine how the proposed pulping process would be applied. It is not likely that the proposed prototype is at TRL 7 based on what is stated in the proposal. The Bidder states that they spent 12 months working on theoretical modeling, followed by 12 months of lab work to prove the mathematical model. It does not appear that this has been applied to a working process.
- C. No certificates, licenses, or approvals have been obtained. The project concept is too early to fully understand regulatory needs and to apply for necessary permits, certifications, etc. The Bidder requires a facility to scale this technology. Until one exists, there are minimal safety

concerns. The technology described is not at a point where there are current safety issues. This is a process that would be either integrated in a current pulp facility which would use the Bidder's existing safety certifications and procedures. Alternatively, it would be a new build and all safety issues would be addressed at that time.

- D. There is no evidence provided in the Bidder's proposal to support the problem statement that current pulping processes are "not environmentally or economically sustainable." Furthermore, there is not enough evidence provided to demonstrate (even theoretically) that the proposed technology would address those issues if the statement was true. The effort is not at a point where this is evident. The Bidder makes a loose connection of pulp and paper operations to water quality and hence ocean environments, but the solutions is not designed for marine/ocean applications;

We outline our company's technology to highlight how difficult it has become in Canada to innovate without targeted or general government support. Private ventures like ours are no longer able to survive in Canada's business climate. Innovations Solutions Canada claims are that HEJMAS has no evidence regarding our technology, at that time we had already developed the technology and preliminary data. The government chose to ignore the evidence or even ask us if we had developed it far enough. Our technology does not exist anywhere in the world. Through patent searches, industry inquiries, and demonstrable evidence based on testing there is no process as robust at making high grade pulp utilizing bast fibre plants. It is a working process that is currently producing "for sales" samples.

Due to the nascent nature and evolution of pulping technology, existing wood biomass or annualized fiber technology is incompatible with our system. We would have to build a new facility and, as it's being built, understand what safety process would need to be put in place.

Preliminary work with regard to the mill would indicate a high level of ventilation, masks and goggles that are air-tight around the face and a plan in the event of a chemical spill. The chemicals used in processing are water, baking soda at a 10% concentration and oxygen.

Current wood biomass pulping is environmentally unsustainable. Not only does it utilize forests, it also relies on high caustic sulfuric chemicals that are environmentally disastrous in the event of a spill. As the distance to gain access to forests for culling increases, there is both an increase in carbon emissions for culling, danger to waterways that are still used for transport of biomass and overall increases in environmental wear and tear.

Imagine for a minute which process is more carbon intensive;

- a. Having to drive 200 km into the back country to run a log cutter/tree feller, the wood is picked up and moved onto a sixteen-wheeler which drives back to a saw mill. The saw mill needs to process said logs into chips. Those chips are loaded back onto rail cars or sixteen wheelers and transported another 200 km to a pulp mill. Those chips are loaded into the pre-treatment container, washed, fed to a continuous digester where the chips are processed using sulphuric acid, washed again, run through a bleaching machine using bleach or hydrogen peroxide, washed, dried in large sheets, cut and baled. Per ton produced 945kg of CO₂, not including harvesting and transport to the mill.

- b. Our process is having to wait for the annual harvest to be finished and the straw, if not rutted, baled for transport by the farming operation. A truck travels 80km to pick up 44 tons of biomass and move it to the decortication operation (about 1/10th of the energy needed for processing compared to a saw mill). The fiber is washed, run in a batch processor of baking soda, washed using recycled water from the first step, run through an oxygen bath, dried, cut and baled. Per ton produced 150 kg of CO2 not including farming harvest and transport to the mill.

Forestry companies we have approached for the potential for a joint venture or even potential funding have spurned our attempts to formal dialogue. We have been told “If you work with us, we will be handing over your technology to China” and “I don’t need to partner with an Alberta company to get Alberta’s money, the federal government will hand it to us”. Our technology, to be clear, is not remotely compatible with existing wood biomass pulp mills. It would be akin to trying to use steam engine parts in a TESLA to fix the TESLA, it just won’t work.

Secondly the subsidies, through tax breaks and promises of environmental research, have not incentivized forestry companies towards finding pragmatic alternatives to their own processes. Furthermore, the choice a company makes can be summarized as the forestry companies’ reluctance to partner with a higher risk partner versus continued guaranteed profitability in the form of government subsidies. In that dichotomy it is easy to understand the Forestry position; it is more profitable to search for the solution than to find the cure.

Overall access to federal funding on this project has been nothing short of impossible. If insight into our project is along the lines of the Innovations Solutions Canada response, the “experts” evaluating the technology not only lack the experience, but the imagination, regarding our technology’s existence. Our own forestry experts could not fathom the wild success we had upon the first-round completion of the commercialization trials for the technology, and yet the federal government is wholly uninterested.

Our hope is that committees recognize the changes Canadian companies like ours can bring to lowering carbon emissions, for Canada, then for the world. Specifically, that nascent and innovative technologies like ours can thrive in an environment, without picking winners and losers through government subsidies and bureaucrats. We also hope that this report recognizes the need in Canada to create a business environment where private investors want to come in to Canada, instead of recommending that companies like ours put our technology into practice in other countries.

HEJMAS Agrifibre Technologies is an Albertan start-up focused on providing biotechnology through better utilization of farming waste. Founded in 2020 during the COVID pandemic by Marek Hejduk (Inventor and CEO) and Ondra Maseja (Co-Inventor and CFO) their patented and novel farm waste to pulp through a customized method promises to change heavy industrial pulping into a low carbon environmental process. Further developmental intellectual property is set around monetizing the waste streams to produce a true bio-organic plastic devoid of any petrochemicals, a high value fertilizer for continued agricultural usage, and a bio-organic wire made exclusively from hemp. Through a team of scientists, advisors with decades of business experience and a vision for a low carbon green economy HEJMAS brings the solutions of tomorrow today.