



SCALABLE MANUFACTURING OF ASH-DERIVED BIODEGRADABLE PACKAGING

SMART Eureka Project Idea | VASCH Ltd., Canada



ORGANISATION PROFILE

VASCH Ltd. is a Canadian circular-materials innovation company transforming wood ash, an underutilized biomass residual, into higher-value materials. VASCH is led by Hannah Nassiri, Founder & CEO and a chemical engineer with 15+ years of experience in materials innovation, process development and applied R&D. The team includes process engineering and research/materials expertise, supported by strategic advisors and a growing network of technical and industry partners.

VASCH's technology platform focuses on two pathways: ash-derived functional ingredients for cleaning products and ash-derived biodegradable materials for non-food packaging. Its R&D expertise includes biomass ash characterization, formulation, material development, prototyping and process scale-up. VASCH has established R&D relationships with Loyalist College and Carleton University and biomass relationships in Northwestern Ontario.



PROPOSAL INTRODUCTION (I)

VISION

Develop and validate a scalable manufacturing pathway for VASCH's ash-derived biodegradable material for non-food packaging, creating a practical pathway from Canadian technology development to European pilot manufacturing and commercialization.

MOTIVATION

Biomass ash is an abundant, underutilized industrial residual, while packaging manufacturers are under growing pressure to reduce reliance on conventional plastics. VASCH has advanced the material platform through Canadian R&D and is now moving toward MVP and pilot readiness. The next challenge is translating the material into a repeatable, manufacturing-ready process and validating it with an industrial European partner.

CONTENT

- Translate the ash-derived material into manufacturing-relevant processing conditions.
- Evaluate and optimize suitable forming/molding and processing approaches.
- Develop manufacturing parameters, tooling/process requirements and quality criteria.
- Produce functional prototypes and validate mechanical, thermal, water/barrier and application-specific performance.
- Define pilot-scale requirements, process scalability and integration with existing packaging manufacturing infrastructure.

PROPOSAL INTRODUCTION (II)

EXPECTED OUTCOME

- Manufacturing-relevant material and process parameters.
- Functional non-food packaging prototypes.
- Performance and process-validation dataset.
- Pilot manufacturing pathway, including scale-up and quality-control considerations.
- Technical basis for European customer validation and commercialization.

IMPACTS

The project will reduce the manufacturing and scale-up risk of VASCH's circular-materials technology, enable collaboration with European packaging/manufacturing companies, and accelerate the pathway from MVP to pilot production. It supports new value creation from biomass ash, reduced reliance on conventional plastic packaging, and future circular-materials manufacturing in Canada and Europe.

SCHEDULE

Target duration: approximately 24 months, beginning after consortium formation and applicable national funding approvals. The detailed workplan and milestones will be jointly defined with the selected European industrial partner.

PARTNERS

CURRENT CONSORTIUM

VASCH Ltd. Canada

Project leader; biomass ash valorization technology, material development, formulation, prototype development, process development and commercialization.

VASCH's Canadian R&D foundation includes established collaborations with Loyalist College and Carleton University. These relationships support the existing material-development and validation pathway but are not being presented as committed SMART consortium partners at this stage.

PARTNER SEARCH

VASCH is seeking European industrial partners, particularly in Austria, Czechia and other SMART countries, with expertise in:

- packaging manufacturing and conversion;
- injection/compression molding, thermoforming or other relevant forming processes;
- polymer/material processing and scale-up;
- tooling, pilot manufacturing and process optimization; and/or
- application validation for cleaning, cosmetic/personal-care and other non-food packaging.

Priority: an industrial partner able to co-develop and validate a scalable manufacturing process and support pilot production.

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