



Composites
Innovation Centre

Kestrel Car

WHAT

PROJECT MANAGER:

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Composites Innovation Centre

VISION

To develop the structural body parts of an electric hybrid vehicle using traditional and bio-based composite materials.

SUCCESS

- Demonstrated the ability to use biofibre reinforcements and bio-based cores in structural automobile parts
- Materials are capable of withstanding torsional, bending, and roof crush load cases
- Successful manufacturing trials demonstrated processing steps required to produce high quality parts
- Use of renewable materials reduces reliance on petroleum based products

PROJECT HIGHLIGHTS

- Biotex 2x2 twill woven flax reinforcement sourced from Composites Evolution in the UK
- Manitoba grown hemp fibre processed by SWM blended with agave fibre was formed into a nonwoven mat by Federal-Mogul Systems Protection. This unique natural fibre reinforcement actively facilitates thermoset closed-moulded processing and exhibits enhanced mechanical properties when combined in a glass-hybrid laminate structure.
- Soy-based foam cores utilized to create sandwich panels to reinforce front and rear tub floors
- Laminate schedule defined for each part using a hybrid layup of hemp/agave, flax and fibreglass
- Finite element analysis with detailed stress and strain results for each ply
- Computer Aided Design (CAD) modelling to modify part designs for Resin Transfer Moulding (RTM) light processing
- Manufacturing trials to determine best practices when using bio-based materials

VALUE

- Showcases the successful application of agriculturally derived composite reinforcements and demonstrates their viability as an alternative to traditional composite materials for automotive applications
- Reduce reliance on petroleum based reinforcements and cores resulting in a decreased carbon footprint

PARTNERS

- Composites Innovation Centre
- Motive Industries Inc.
- SWM International
- Federal-Mogul Systems Protection
- Fiber-Werx International Inc.
- Agriculture and Agri-Food Canada – Developing Innovative Agri-Products
- Manitoba Rural Adaptation Council Inc.

