PRODUCT INNOVATION

Solution Providers for the Composites Industry

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Composites Innovation Centre

Development of Bio-Motorcycle (EcoCycle)




WHAT

PROJECT MANAGER:
Simon Potter, Composites Innovation Centre

MAJOR CONTRIBUTORS:
Manitoba Innovation, Energy and Mines – Science & Technology International Collaboration Fund / Chopper College

VISION

- Design, manufacture, and test natural fibre (hemp) based structural motorcycle components at the Composites Innovation Centre and incorporate these parts on a next generation bio-fueled chopper motorcycle with Chopper College. Components identified for this project, branded as the EcoCycle, included a world's first biomaterial fuel tank suitable for alternate fuels (E85) and a natural fibre reinforced rear fender panel

PROJECT HIGHLIGHTS

- Transferred a bio-composite technology to a new industry sector – motorcycle designers and builders
- Developed a lighter, more fuel-efficient prototype for alternative fuel powered motorcycles with enhanced energy efficiency in production and operation using Manitoba sourced natural fibres

SUCCESS

The EcoCycle project used Manitoba-sourced biomaterials and the CIC's own extensive materials database for component design and Finite Element Analysis (FEA). Major stages in the project included:

- Product part performance development
- Laminate scheduling, component thickness, and weight
- Shape definition - 3-D CAD files
- Structural analysis considering static and fatigue loading
- Impact resistance requirements modeling based on current automotive fenders
- Impact resistance testing (drop weight impact tester)
- Shape definition and CNC machining of high density foam master moulds
- Manufacturing closed cavity back moulds (female moulds)
- Fabrication of natural fibre fuel tank and fender panel
- EcoCycle build completion and road-testing

VALUE

- To demonstrate the capacity of the Red River Valley community to deliver a unique biomaterials product to the marketplace rapidly and efficiently
- To cement Manitoba's reputation as "Biomaterials Central" for global research, development and commercialization
- To provide measurable economic benefit by opening up new value streams for local farmers employing previously underutilized crops