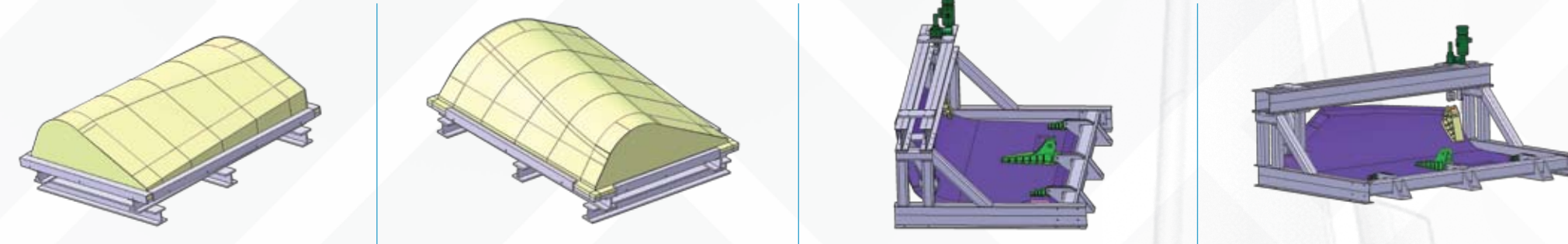




# Lightweight Low Cost Fairings and Landing Gear Doors



## WHAT

### PROJECT MANAGER:

Mike Hudek, Composites Innovation Centre

### INDUSTRY PARTNER:

Boeing Canada Operations Ltd.

### MAJOR CONTRIBUTORS:

Convergent Manufacturing Technologies, National Research Council - Institute for Aerospace Research (NRC-IRAP), Accion Industries

## VISION

- To demonstrate the use of process simulation to reliably compensate tooling geometry in an effort to minimize the impact of process induced deformations for composite component manufacture.

## SUCCESS

- The project successfully demonstrated the ability to use process simulation to predetermine tooling surface geometry to minimize the impact of process induced deformations in composite component manufacture
- The manufacturing approach and prototype developed by this project has facilitated Boeing Winnipeg's continued success in manufacturing this large and important piece of composite structure
- The project supported Boeing's development of the next generation composite main landing gear door design that has resulted in a weight reduction for this component
- The project connected Boeing with a small Western Canadian company for the purpose of evaluating their electron beam curing technology for composite aerospace tooling

## PROJECT HIGHLIGHTS

- Used process simulation to define compensated tooling geometry for prototyping, effectively eliminating several iterations of tooling geometry design
- Supported the development of a specialized capability at Boeing Winnipeg to manufacture large main landing gear doors using a novel design that saves component weight
- Completed an evaluation of electron beam cured tooling for composite manufacturing
- CIC personnel directly involved and working onsite at the Boeing facility providing engineering support to the Boeing team

## VALUE

- Supported Boeing Winnipeg developing a new product, the 787 Main Landing Gear Door
- Facilitated Boeing Winnipeg successfully delivering on design and development of the 787 main landing gear door, resulting in job retention in Manitoba
- The process simulation technique conducted by Convergent demonstrated during this project was subsequently used to design tooling for the 787 fuselage shear ties manufactured at Boeing Winnipeg resulting in significant cost savings in tooling
- Developed a strong relationship between Boeing Winnipeg and the CIC

