



ONTARIO BIOAUTO COUNCIL

“Biofibe 2011”

Winnipeg, Manitoba
October 25, 2011

Craig Crawford, President & CEO

Background

- Mission:
 - To become a global leader in the use of bio-based materials (resins, fibres, polymer additives, composites, and related advanced manufacturing equipment)
- Approach:
 - Customer-driven (not producer-driven)
 - Cost and performance are key drivers
 - Global membership
 - Open innovation
 - Focused on near term commercialization
 - But partner with other organizations, networks, councils on industry-driven basic and applied research
 - e.g. ArboraNano Network, NSERC Green Fibre Network, Center for Research and Innovation in the Bioeconomy (CRIBE)

Ontario BioAuto Council

Board of Directors:

- **Chrysler Canada (J. Mann)**
- **Automobile Parts Manufacturers Association**
- **Magna Interiors and Exteriors**
- **Woodbridge Group**
- **Canadian General Tower**
- **Husky Injection Molding**
- **AUTO21 Network Centres of Excellence**
- **Ontario Centres of Excellence**
- **Sustainable Chemistry Alliance**
- **Tembec / Greenfield Ethanol**
- **Ontario Agri-Food Technologies**
- **PSA Composites**
- **Woodrill Ltd.**

Members (examples):

- **Toyota Tsusho Canada**
- **DuPont Canada**
- **Cargill (US)**
- **Dow Automotive (US)**
- **DSM (Netherlands)**
- **BASF (Germany)**
- **Braskem (Brazil)**
- **BioAmber**
- **Rentech**
- **Merquinsa North America**
- **Bayer Material Science**
- **Valle Foam**
- **Carpenter Company**
- **CCC Plastics**
- **Innventia (Sweden)**
- **National Research Council**
- **FP Innovations**
- **Exova (formerly Bodycote)**
- **University of Waterloo, WatCAR**
- **University of Toronto, Centre for Biocomposites and Biomaterials Processing**
- **Alberta Innovates – Bio Solutions**
- **Enterprise Saskatchewan**
- **Linnaeus Plant Sciences**
- **SWM International**

Peugeot Citroen: Green Material Plan

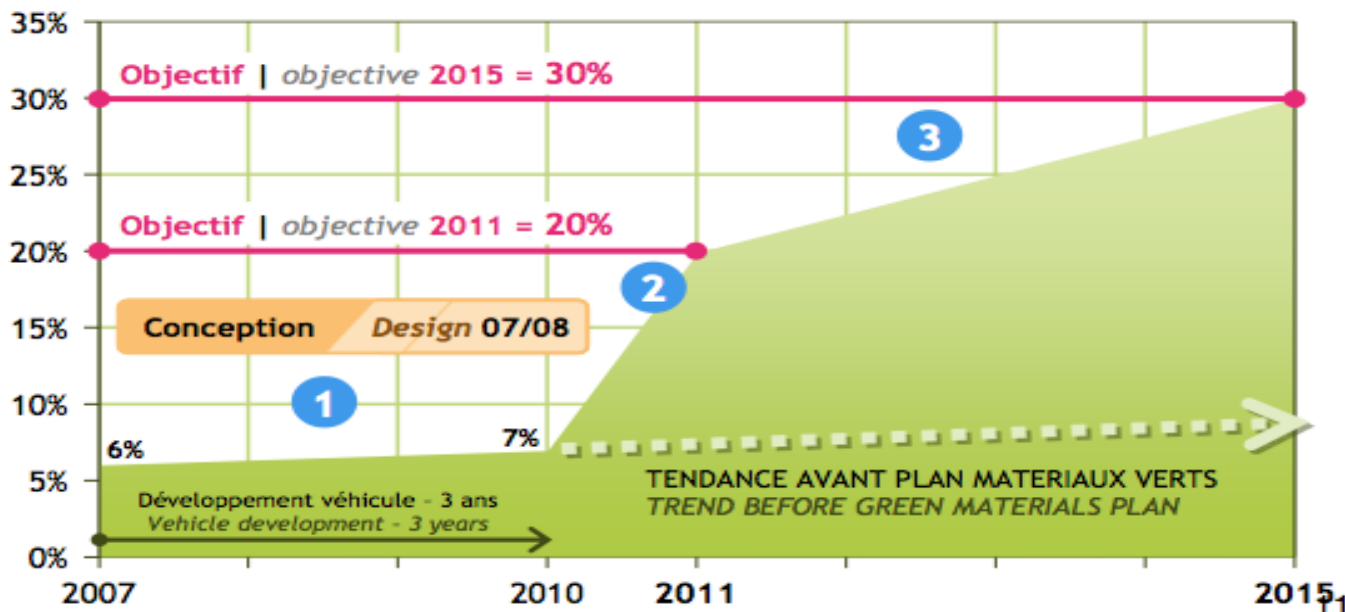
Green Material Targets

- 20% of polymers by weight by 2011
- 30% by 2015

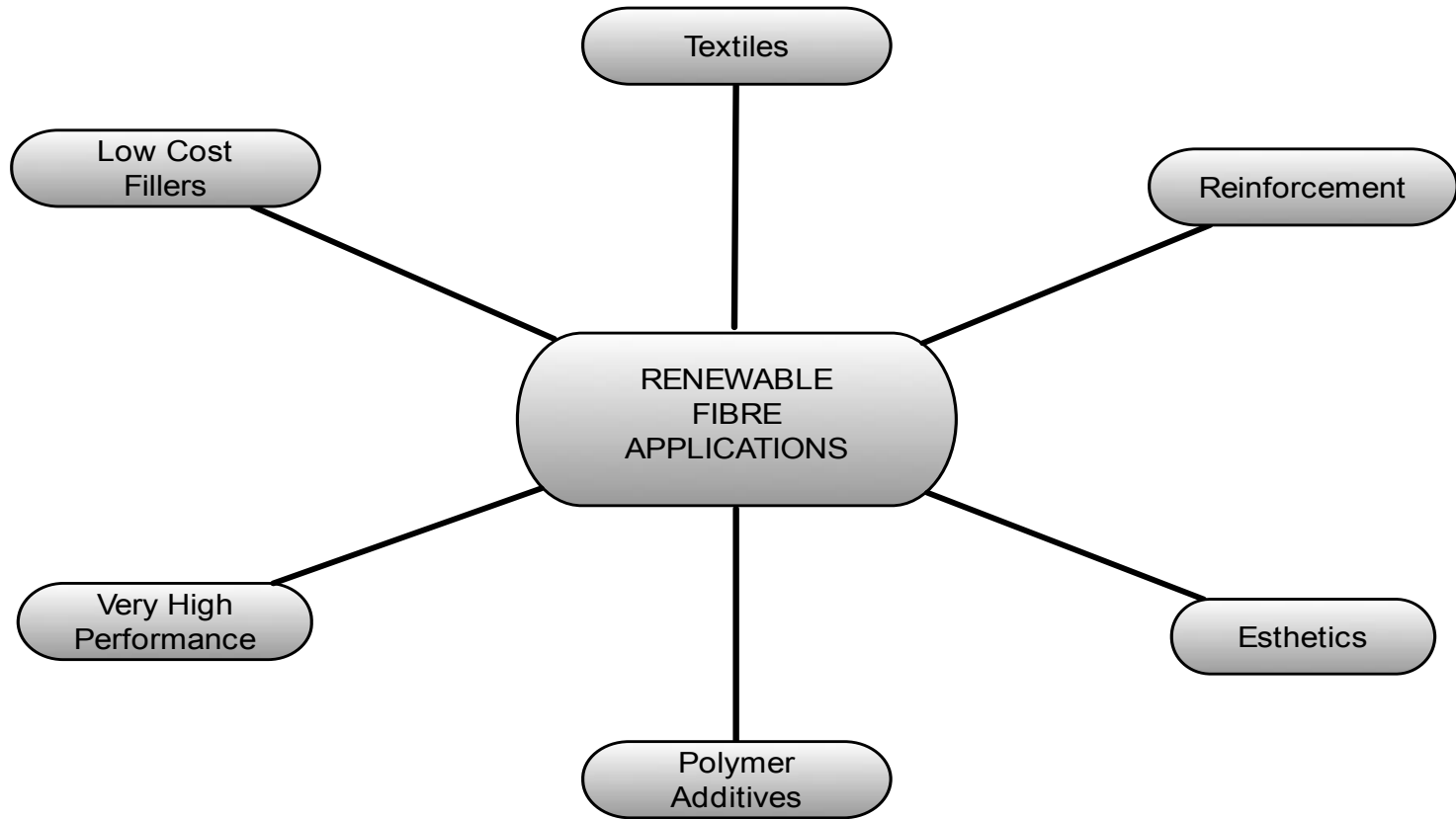
Green Materials

- Natural Fibers
- Biopolymers
- Recycled plastics

▶ 3 familles de matière pour tous les véhicules *families of materials for all vehicles*



Renewable Fibre Applications





Natural Fiber Benefits



Weight Reduction

- lower density: *natural fiber: 1.3 – 1.5 g/cm³
glass fiber: 2.6 g/cm³*
- potential savings up to 30%

Cost Comparison

- glass fiber: \$0.50 – \$0.90/lb
- natural fiber: \$0.30 – \$0.80/lb
- potential cost savings up to 20%

Renewable resource ("green")



Potential Wheat Straw Applications



Near Term Applications for Wheat Straw- PP Composites



Fuel Tank Shield



Battery Tray

Injection Molded Opportunities

Interior:

- seat side shields
- center consoles/ hard trim
- appliqué/ bezels/ substrate

Exterior/Underbody:

- splash shield
- fuel tank shield
- leaf or cowl screens

Underhood:

- battery tray
- air cleaner housing
- beauty covers

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GreenCore MicroFibre

GreenCore
Naturally Strong

NCell™ Natural Fiber Composites
Injection Mold Lightweight, Structural Parts

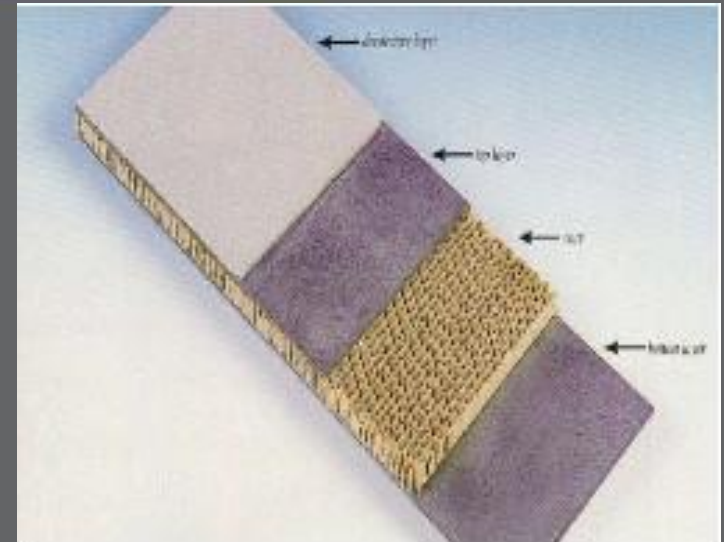


Magna: Space Age Bio-based Load Floor

Magna Loadfloor Construction



- Layered sandwich composite process
- Material
 - Soy polyol to replace up to 50% of fossil fuel based polyol
- Material Suppliers
 - Dow
 - Bayer
- Process
 - Fabricate a glass/honeycomb/glass sandwich
 - Spray urethane (contains the Soy Polyol) on both sides
 - Place in tool, close press and cure
 - Removed finished composite part



Bio-based Automotive Loadfloors



Going Forward

- Council has signed contract with Ontario Ministry of Research and Innovation (MRI) to:
 - Build receptor capacity in Ontario's chemical and manufacturing sectors
 - Work with the Ontario Network of Excellence and other levels of government to fill in existing supply chain gaps and expand global markets
 - Provide advice to MRI on policy and program development, based on lessons learned and international best practice

Questions

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